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FROM CONSUMER GOODS TO INDUSTRIAL PLANTS

In tune with the endeavour for export diversification undertaken by several modern firms in India, M/s. Escorts Limited, 18/4, Mathura Road, Faridabad (Haryana), have succeeded in introducing a wide variety of manufactures in their export stream. Their total export turnover rose from Rs. 5.4 million in 1970-71 to Rs. 6.98 million in the subsequent year. Their major export products have been garments, textiles, radios, leather goods and blankets. They were awarded a special medal in recognition of their export performance by the Engineering Export Promotion Council, Calcutta, for outstanding performance in the export of engineering products.

The company has come to establish market sfor their products in Africa, South East and West Asias, Western Europe, United States and Canada and is actively engaged in penetrating new markets like Latin America and the neighbouring countries of Sri Lanka, Nepal and Bangladesh.

In 1971-72, transistor radios accounted for the major export earning of the company at Rs. 3.2 million. Woollen made-ups was another area where the firm mproved offtake substantially from almost nothing in the previous year to Rs. 1.22 million in 1971-72. A wide range of other products were also introduced by the firm in the export markets including agricultural implements, readymade garments, leather footwear, pure silk fabrics and metric weights. Sudan was their best customer with an intake value of Rs. 4.82 million in 1971-72. U.S.A. was another important buyer having imported Rs. 0.9 million worth in the same year. Zambia, Federal Republic of Germany, Thailand, Canada, Yugoslavia, Ghana and the U. K. were among the other importers.

M/s. Escorts Limited have also entered into collaboration with a Ghanian firm for the manufacture and assembly of agricultural machinery. They have plans to undertake similar ventures in Iran, Indonesia, Burma, Libya and Sri Lanka.

Originally, the firm functioned as an agency for an American manufacturer of electro-medical equipment. More agencies from U.S.A., U. K., West Germany, Yugoslavia, Hungary, Japan and Poland were taken up by them later. Since then the story of this enterprise comprised consistent diversification in the realms of production and export—from household goods to industrial plants. Today, the company has six industrial plants (four in Faridabad and two in Patiala), seven marketing divisions, 27 foreign agency representations and a national marketing network of over 300 outlets. Faridabad factories assemble and manufacture tractors, trailers, motorcycles, scooters, electro-medical equipment, automotive shock absorbers, railway couplers, brake equipment, heating elements for industrial and domestic applications, industrial tractors besides other engineering items. The firm claims to be one of Asia's largest producers of tractors, in the 25 to 50 hp range, accounting for over 50 per cent of India's total tractor output. In 1970 about 11,000 tractors were sold by the firm. The import content of tractors manufactured by them has been steadily on the decline and the indigenous content rose from 50 to 80 per cent. A recent addition to their tractor range was the 36 BHP tractor which has a water-cooled engine to suit the humid weather in parts of India. Besides being one of the premier tractor producers in the country, the company has supplemented the governmental effort to introduce scientific farming techniques by disseminating knowledge about the developing technology of modern farm machinery, crop production practices, use of high-yielding varieties, farm management and plant protection measures.

The firm's contribution to the bi-wheeler industry is another facet of their programmes for industrial developement and diversification. One of the leading bi-wheeler producers in India, the company has developed and designed motor-cycles and scooters (Rajdoot) that are fully indigenous in content and technology. The bi-wheeler plant at Faridabad has a licensed capacity of 24,000 units per annum. They have put on road over 90,000 motor-cycles and scooters since the inception of the plant in 1962. The firm's factories engaged in bi-wheeler production are currently turning out motorcycles at the rate of 500 units per month. They have in fact produced 10,000 units in the first six months of 1972 as against 6800 in the same period of the previous year. The company's plant has a full-fledged quality control wing to ensure quality performance at all stages of production, right from component stage to engine assembly, supported by durability and performance tests of the finished product under simulated conditions.

The company also manufactures a variety of sophisticated railway equipment. Fully automatic centre buffer couplers and semi-permanent couplers for EMU railway stocks are manufactured by them in collaboration with a West German firm, while electric pneumatic and compressed air brake systems for EMU's electric and diesel locomotives and wagon stock and vacuum control valves are produced in collaboration with another West German firm. They also produce hydraulic shock absorbers for rolling stock of the Indian railways.

Among other areas of manufacture in which the company has made a headway are automobile ancillaries and tubular heating elements, while mention may be made of railway shock absorbers, bright steel shaftings, sports goods, steel forgings, bicycles and parts, mild steel head pans and handicrafts among the range of other products exported by them.

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ELECTRICAL MACHINERY ON EXPORT STREAM

Export of electrical machinery and appliances have revealed a clear uptrend in recent years. During 1971-72, the export earning of these items was at a value of Rs. 186.74 million as against Rs. 160.81 million in the preceding year, registering an increase of about 15 per cent over the export value of 1970-71.

During 1971-72, nearly all the categories in the line witnessed uptrend. The exports of equipment for distributing electricity constituted the major category which fetched Rs. 54.02 million as compared to Rs. 35.65 million in 1970-71. Electrical power machinery and switchgear was the next important category, the export earning of which was valued at Rs. 47.48 million as against Rs. 44.68 million in the preceding year. Telecommunication apparatus was one more area, the exports of which improved to Rs. 29.92 million in the year under review (1971-72) from Rs. 27.02 million in the previous year. Besides these main categories, exports of other electrical machinery and apparatus too improved marginally to Rs. 39.01 million from Rs. 37.33 million (1970-71).

The only category which witnessed marginal decline in exports in 1971-72 as compared to 1970-71 was the domestic electrical equipment. The export earning declined to Rs. 15.44 million from Rs. 15.59 million.

U.S.S.R., Singapore, Arab Republic of Egypt, Federal Republic of Germany, Dubai, Nigeria, Iran, Sudan, U.K., Ethiopia, Nepal, Japan, Yugoslavia, Kenya, Kuwait, Yemen Arab Republic, Netherlands, Qatar, Tanzania Republic and New Zealand were the prominent markets for these items during 1971-72.

Adding to the export effort of the electrical machinery manufacturing sector, one of the firms engaged in the line M/s. New Government Electric Factory Limited (NGEF), Byappanahalli, Bangalore, secured export orders valued at Rs. 6.69 million in 1971-72 for the supply of transformers, motors, diodes and switchgears to overseas markets.

In 1971-72, the Bangalore firm produced 1394 mva transformers, 382,148 hp motors, 4285 silicon powder diodes and swithchgears valued at Rs. 118,000. The firm's production and net sales during the year were of the order of Rs. 146.2 million and Rs. 140.2 million respectively registering an increase of 24.2 per cent and 34.9 per cent respectively.

During 1971-72, India's production of electric motors and transformers was of the order of 50.70 million as against Rs. 22.42 million in 1970-71. This represents an increase of over 50 per cent.

POLYESTER WIRE ENAMEL TO SOVIET UNION

An export contract has been recently signed by an Indian firm with M/s. Sojuzchimexport, Moscow for the supply of 3,000 tons of Terephthalic Polyester Wire Enamel valued at Rs. 18.6 million. Of the quantity contracted for, one third is a firm order and finalisation of the deal for the balance supply is expected to take place by January 1973.

The Indian company which has secured the order from the Soviet Union, M/s. Dr. Beck & Co. (India) Ltd., Poona-18 succeeded in exporting Rs. 5.47 million worth of their products for the first quarter of their financial year, July 1972-June 1973.

The above company is popularising in India the pollution-free enamelling system with thermal oxidization pollution controls as an integral part of the system. It is a new design eliminating catalysts resulting in lowering maintenance costs and energy costs, increasing production and maintaining full compatibility with present methods for wire enamelling.

The Research and Development Department of the company have developed new series of hardeners also. These are liquid hardeners, containing amino groups that react with expoxy resins at room temperature giving cured products. The company have received an order for cable jointing kits from the State Electricity Board, Madhya Pradesh for augmenting the distribution capacity in Indore city with 34 kilometres of 11 kv PILC underground cable system.

Also Dr. Beck & Co. launched a Mobile Technical Service Laboratory (MOBILAB) to spread its technical services throughout the length and breadth of India. The 'MOBILAB' demonstrates some of their processes like wire enamelling and cable joint insulation with epoxy resin.

Certain items which were in fact imported till the other day have now been transferred to the expert surplus list; they include air conditioners and refrigerators, structural fabrications, scientific instruments and ball and roller bearings.

The range of engineering products that the Indian industry is today capable of supplying abroad at competitive price and quality considerations is so complex that it comprises not only hand tools and small tools, iron and steel castings, dry and storage batteries, E.P.N.S. ware, builders' hardware, fountain and ball pens, steel tanks, umbrellas and G. I. buckets but electric motors, switchgears, transformers, machine tools, wire ropes, bright steel bars and shaftings, railway track material, non-ferrous metal products, agricultural implements and machinery, air compressors, cranes, telephone equipment and tractors.

Doubtless, the rate of growth in the export trade of engineering products from India has somewhat declined, in the period under review, as compared to the recent years owing to temporary shortages and difficulties faced not only by the Indian exporters but the world over. All the same, the fact remains that the engineering industry has made a mark in diversifying its export range, direction and competence.

EXPORT PROSPECTS FOR ELECTRICAL EQUIPMENT

Substantial scope for increasing export of electrical equipment and services awaits in many African countries, according to a delegation of Indian Electrical Manufacturers' Association which recently visited some of the countries in Africa. The African customers were indeed satisfied with the quality of India made electrical equipment.

The electrical equipment that has specific demand in the African countries ranges from transmission towers to transformers, switchgears, AAC/ACR conductors, cables and house service meters. Countries like Zambia, Nigeria, Libya and Kuwait are currently engaged in increasing their generating capacities to meet fast growing demand for electrical power. The demand is stated to be rising at the rate of 12 to 15 per cent in Zambia and Nigeria and 25 to 33 per cent in Libya and Kuwait.

There are opportunities for the Indian industry to set up joint ventures in Nigeria for the manufacture of various electrical products. In other countries also such collaboration ventures are feasible.

The power development authorities of the countries that the delegation visited evinced interest in learning about India's rural electrification programme and sought technical help from India's Rural Electrification Corporation (REC). Government to Government training schemes were welcomed from India by the countries visited by the delegation.

CONSISTENT EXPORT GROWTH IN PROCESSED FOODS

India's export trade in processed food products, is estimated to reach the level of Rs. 180 million during 1972-73. The volume of overseas supply in this line of non-classic export trade has witnessed a consistent uptrend. The foreign exchange value was only Rs. 60.43 million in 1967-68, but improved to Rs. 99.2 million in the subsequent year. The value further rose to Rs. 116.28 million in 1969-70, Rs. 154.58 million in 1970-71 and 161.97 million in 1971-72.

A significant factor that proved helpful in the export expansion of processed food products has been the growing interest shown by the East European markets. India's trade with East Europe has particularly improved in regard to the fruit products. Undoubtedly, USSR occupies the premier position. As an example, the Soviet Union increased its offtake of mango juice from Rs. 11 million in 1971 (6000 tonnes) to Rs. 15.2 million in 1972 (8000 tonnes). For the first time, Poland placed sizeable orders during 1972 for Indian mango, pine apple and guava products for a total of Rs. 13 million. Again Czech buyers have started evincing keen interest in importing the mango products and canned vegetables.

It is estimated that in the 1973 season, India's fruit and vegetable industry will be able to export at least about 16,000 tonnes at a value of Rs. 35 million to East Europe alone, according to the Processed Foods

Export Promotion Council, New Delhi. There are clear indications that the German Democratic Republic will not lag behind the other East European buyers in purchasing substantial quantities of Indian pine apple and mango products.

Guargum, after fruit products, offers another growth point in the export trade. This product group contributes as much as 33 per cent of the current export level from India in the processed food group and its exports have been of the order of Rs. 50 million per year.

The Processed Foods Export Promotion Council have also identified new items such as butter, agar agar and frozen meat for which the world demand has picked up sizeably in recent years.

The food processing industry in India is today in a position to undertake the manufacture, under competent hygienic conditions, conforming to internationally acceptable standards, utilising the latest dehydration techniques. The extensive range of processed foods being produced on competitive basis includes cereal products, sea foods, poultry products, meat preparations, biscuits and confectionery, preserved fruits and vegetables, squashes, pickles, chutneys, dextrose powder, liquid glucose, chocolate, cocoa powder, infant milk powder, and instant beverages. Continuous research and development work is being carried out to preserve and improve the nutritional contents of the products. The Central Food and Technological Research Institute, Mysore, which is actively engaged in the research and product development have standardized several processes many of which have been released for commercial exploitation. The growth and diversification in the processed food industry in the country are not only to help increase the earning of foreign exchange but assure overseas confidence in the hygienic standards and quality of products amongst overseas consumers.

INDIA'S DISAPPOINTMENT AT EEC SUMMIT

Most of the issues discussed at the summit conference of the heads of governments of the present and prospective member states of the European Economic Community (EEC) that was held in Paris during October 1972 were primarily of interest to the EEC itself and the Community's response to the expectations of the developing world was indeed disappointing. It is reported that even according to the President of the EEC Commission, progress in the Summit would not be considered satisfactory from the point of view of the developing countries, as no precise proposals were adopted to promote the trade of the developing countries as a whole or in respect of expansion of financial aid offered to them.

The Summit failed to adopt the proposals submitted by the Commission for encouraging growth of imports from developing countries at the rate of 15 per cent per year and for expansion of finance offered towards these countries to reach the threshold of 0.7 per cent of the gross national product of the donor countries within two years.

While there was a special mention in the Paris Communique on the importance of the policy of association and the community's commitments to the Mediterannean region, there was complete omission of any reference to other developing countries. The reference in the communique to the countries to be at the insistence of France would not bode will in non-associable countries like India.

The Government of India have already approached the EEC for immediately starting negotiations with a view to arrive at a bilateral commercial cooperation agreement.

EXPORT OF MILL-MADE COTTON TEXTILES IMPROVE

The export value of mill-made cotton textiles improved from Rs. 822.13 million in 1967 to Rs. 953.16 million in 1968, Rs. 1051.90 million in 1969 and Rs. 1164.93 million in 1970. However, there was a setback in 1971 at Rs. 1093.57 million.

The exports again picked up at Rs. 1177.34 million during the first ten months of 1972 ascompared to Rs. 855.08 million in the corresponding period of 1971.

The increase was possible due to favourable cotton supply position and was registered by all items in the group including cotton piece goods, cotton yarn, cotton apparel, cotton hosiery, and other cotton manufactures.

Of the total increase, cotton yarn contributed the major share. Exports of cotton yarn during January-October 1972 more than doubled to 18.03 million kgs. as against 8.97 million kgs. during the same period of 1971. In value also the increase was almost of the same order from Rs. 93.55 million to Rs. 183.46 million.

The next important item contributing to the export increase in the comparative periods of 1971 and 1972 was cotton piece goods. In terms of quantity, the ten months of 1972 witnessed an export of 339.41 million sq. metres for piece goods compared to 314.23 million sq. metres in the corresponding period of the preceding year. Value-wise, exports amounted to Rs. 648.14 million and Rs. 528.97 million respectively in the two years. Even the average unit value realisation for piece goods improved to Rs. 1.97 per sq. metre from Rs 1.71 per sq. metre in 1971.

Regionwise, shipments of cotton piecegoods to the Asian Zone showed an increase. While shipments to Afghanistan showed an improvement, exports to Bangladesh aggregated to Rs. 8.4 million. Exports to Malavsia and Singapore were maintained at the previous year's level. Saudi Arabia increased her offtake from 3 million sq. metres during January-Oct. 1971 to 5.2 million sq. metres during the same period in 1972. Exports to Nepal were higher at 33.7 million sq. metres as against 28.2 million sq. metres. Shipments to East Africa continued to be small, but steady. Shipments to Somalia, Zambia and Mauritius were also steady. Exports to EEC almost trebled from 7.6 million sq. metres during January-Oct. 1971 to 20.6 million sq. metres during the same period of 1972. Both West Germany and France have accounted for this improvement. Supplies to the Scandinavian countries were well maintained. Exports to UK, at 53.3 million sq. metres, however, continued to trail behind the level of 82.5 million sq. metres touched during the corresponding period in 1971. The industry has voluntarily accepted the scheme of compulsory exports and the pace of shipments to UK during November and December is expected to be brisk. Shipments to the USSR both under the bilateral agreement and the cotton conversion deal, continued to be heavy. Exports to that market stood at 79.4 million sq. metres valued at Rs. 189.4 million during January-Oct. 1972.

In the American Zone, shipments to Canada rose from 4.8 million sq. metres during January-Oct. 1971 to 7.8 million sq. metres during the corresponding ten months in 1972. Exports to U.S.A. rose from 47.2 million sq. metres to 63.2 million sq. metres during the same periods. However, exports to the major markets in Oceania, both Australia and New Zealand, were less.

Exports of apparel looked up from Rs. 94.2 million during Jan.-Oct. 1971 to Rs. 163.20 million during the same period in 1972. Russia continued to be the major market with an offtake of Rs. 40.1 million. She is closely followed by Sweden with an offtake of Rs. 34.8 million. Shipments to West Germany increased fourfold from Rs. 4.6 million during January-Oct. 1971 to Rs. 17.7 million during the corresponding period in 1972. Shipments to both UK and USA were steady. The offtake by France, Italy, Netherlands and Denmark was higher. Australia also bought about Rs. 3.0 million worth of garments during the period in 1972.

As regards cotton hosiery, overseas supplies improved from Rs. 2.8 million during January-Oct 1971 to Rs. 4.2 million in the same period in 1972. Similarly exports of made-up items registered an increase from Rs. 135.4 million to Rs. 178.3 million. Handkerchiefs, towels, bed-sheets, pillow-cases, made-up furnishings, shared the increase in trade. Sewing thread, cotton socks, and made-up embroidered cloth, however, suffered a minor setback.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

INDIA'S ECONOMIC DEVELOPMENT TRENDS

ECAFE SURVEY

India's national income at 1968-69 prices is estimated to have risen by 4.8 per cent in 1970-71 as compared with 5.3 per cent in 1969-70 according to the Economic Survey of Asia and the Far East (1971). For the two-year period ending 1970-71, the average annual compound rate of growth amounted to 5 per cent as compared with the country's Fourth Five-Year Plan target of 5.6 per cent. The growth was mainly achieved because of a 5.3 per cent rise in agricultural production (foodgrains output is estimated to have reached 107.8 million tonnes in 1970-71). A perceptible increase for the first time was registered in the production of rice from 40.43 million tons in 1969-70 to 42.45 million tons in 1970-71.

The growth rate of mining and manufacturing sectors (in terms of net value added) was 7.2 per cent in 1970-71 as compared with 5 per cent in the preceding year and 7.7 per cent target in the Fourth Plan.

The country's trade deficit fell from Rs. 1.7 billion to Rs. 0.9 billion in 1970-71, exports rising by 8.6 per cent and imports by 2.7 per cent. In 1970-71, authorisation of external assistance rose by 18 per cent in contrast to the 25 per cent decline in the previous year.

The Net National Product at factor cost and at 1968-69 prices amounted to Rs. 315.69 billion in 1970-71 as against Rs. 301.31 billion in 1969-70. The index of agricultural production with 1949-50 as the base year was 182.20 against 170.80. The index of industrial production with 1960 as the base year improved to 180.30 against 172.50.

During the period 1968-69 to 1970-71, the ratio of net investment to national domestic production at current prices was about 9.5 per cent as compared with 13.4 per cent in 1965-66. Evidently, the two major factors of restraint in the growth in investment were the drop in the net external resource offers and increased public consumption.

In the agricultural year 1970-71, foodgrains output reached a record level of 107.8 million tons as against the Fourth Plan target for the year of 106 million tons. In recent years, under the New Agricultural Strategy, the area under high yielding varieties of seeds, particularly wheat and rice, has expanded substantially. The New Strategy making greater use of fertilizers and controlled water supplies, made strides in terms of area under high yielding varieties. Consumption of nitrogenous fertilizers, in terms of nitrogen, increased by nearly 5 per cent in 1970-71 over the previous year to reach a level of 1.43 million tons, as compared with the plan target of 1.73 million tons. Phosphatic and potassic fertilizers recorded an increase of about 10 per cent.

In the realm of industrial production, the general index rose from 161.1 in 1968 (1960 being the base year) to 172.5 in 1969 and 180.3 in 1970. The rate of growth in the output of basic industries becomes clear from the fact that the index improved from 194.6 to 212 and 212 in the corresponding years. In the capital goods sector the index of output rose from 210.3 to 214 and 224. The growth rate in the intermediate goods industry was from 148.2 to 154.4 and 158.6 in the comparable years. As for consumer goods, the production index was 132, 145.3 and 154.4.

In all, the growth rate in the industrial production index was 7.1 per cent in 1969 and 4.5 per cent in 1970; the targetted growth rate for the Fourth Plan was between 8 to 10 per cent per year. An important reason for the slow-down in industrial growth was the shortage of raw materials such as steel, cotton and jute. Capacity limitations proved to be another factor that affected the output in certain industries such as paper, automobile tyres and tubes, tractors and cement, while recessionary trends in demand were responsible for the slow growth in the case of certain other industries such as machine tools, textile machinery and railway wagons. The fall in the production index, however, does not fully reflect the realities of the industrial development and diversification that have taken place in the economy over the years. There are indications pointing to a far better output performance in the sector of small scale industries than in the previous years.

On the foreign trade front, the export value at Rs. 15.35 billion grew by 8.6 per cent in 1970-71, after a rise of only 4 per cent in 1969-70. The growth for the two years at little over 6 per cent per annum is somewhat below the Plan target of 7 per cent. Major items of exports that recorded significant increases in 1970-71 over the previous year were oil-cakes (33.6 per cent), engineering goods (30.1 per cent) and iron ore (23.9 per cent). On the import side, the bill came to Rs. 16.25 billion in 1970-71 which was higher by 2.7 per cent than in the previous year. The major items of imports recording an increase were iron and steel and non-ferrous metals, both important for the industrial development of the economy. Significantly, imports of foodgrains fell by 18.4 per cent and finished and crude fertilizers declined by 14.3 per cent.

In the context of external assistance, authorisations during 1970-71 totalled $ 981 million indicating a rise of 18 per cent in contrast to the fall of 25 per cent in the previous year. The amount of assistance that could be made use of during 1970-71 fell by 8 per cent to $ 1,000 million, mainly due to the tapering off of PL 480 commodity imports. The total debt relief assistance (in the form of fresh re-financing of credit, postponement of payments due, re-scheduling of debt and reduction of interest) authorised during 1970-71 amounted to $ 88 million - $ 23 million lower than the previous year. Total external debt outstanding at the beginning of 1970-71 (including the amount undisbursed) stood at $ 8194 million and ratio of debt services to export earnings rose from 29 per cent in 1969-70 to over 30 per cent in 1970-71, according to the Survey.

SHIPPING TONNAGE TARGET

The Government of India propose to raise the country's shipping tonnage to 10 million GRT by the end of the Fifth Five-Year Plan. When the target will be achieved, a considerable outflow of foreign exchange to foreign shipping companies will have been saved. Simultaneously, earnings by carrying a greater percentage of the country's overseas cargo in Indian bottoms, will be increased.

The shipping tonnage is sought to be increased by setting up new ship-building yards and by adding to the construction capacities of the existing yards. The feasibility of acquiring more ships from abroad is also being examined.

The shipping tonnage in India has increased by 1200 per cent since 1947 - from about 0.2 million GRT to 2.6 million GRT. In addition, 1.52 million GRT is on firm order. With this tonnage, India is able to carry only 20 per cent of the total cargo of foreign trade as against the reasonable share of 50 per cent. The country is thus losing Rs. 1700 to 1800 million annually on freight charges. The gross earnings of Indian ships in overseas trade totalled Rs. 1680 million during 1970-71.

The tonnage on order at present is likely to be acquired in a couple of years, raising the Indian fleet to about Rs. 4 million GRT. The existing modernised Indian shipyards, together with the Cochin Shipyard under construction is expected to add 210,000 GRT to the present fleet by the end of the Fifth Plan. It is in this context that the Government propose to set up additional two major and at least one minor shipyards during the next plan period. Since the construction of new yards is likely to take four to five years, the entire six million GRT will have to be acquired from abroad to reach the target of 10 million GRT.

INCREASED TURNOVER IN OIL REFINING

The Indian Oil Corporation increased their turnover during 1971-72 to the level of Rs. 8620.4 million and earned a profit of Rs. 390.4 million as against Rs. 157.7 million during the previous year. The Corporation's total sales during the year were 13.68 million kilolitres, marking a record increase of 17.8 per cent over the preceding year.

The Indian Oil Corporation's refineries together exceeded the refining target with a total throughput of over 6.71 million tonnes during 1971-72. The Barauni refinery's throughput was 78,232 tonnes more than the targetted 2.2 million tonnes. There was only a marginal shortfall in the processing of crude at the Gauhati refinery of the Corporation. Its Gujarat refinery was able to process all the crude oil received from the Oil and Natural Gas Commission (ONGC). The fourth refinery of the Corporation coming up at Haldia at an estimated cost of about Rs. 675 million, is expected to go on stream by the end of 1973, when the fuels unit of the refinery is likely to be commissioned, followed soon by the lube plant.

The Corporation also has drawn up major plans for expansion of the Barauni refinery to achieve an annual crude throughput of 3.4 million tonnes by 1975. Additional crude required by the refinery is proposed to be imported from the Middle East countries and is to be received at the refinery from the existing Haldia-Barauni product pipeline.

Three of the four pipelines of IOC Viz., Barauni-Kanpur, Haldia-Barauni and Gauhati-Siliguri achieved record throughputs of 440,616 tonnes, 1.36 million tonnes and 605,006 tonnes respectively during the year. The Koyali-Ahmedabad pipeline's throughput was 117 per cent of its designed capacity.

The Corporation supplied during the year 100,000 tonnes of crude oil to Chittagong refinery in Bangladesh and 23,532 tonnes of petroleum products to various areas of that country as part of overall assistance programme approved by the Indian Government.

INCREASE IN FLOW OF TOURIST TRAFFIC

Until November 1972, total tourist arrivals in India were 310,360 as against 284,735 in the comparable period of the last year. During the entire year of 1971, 300,995 tourists visited the country.

The flow of tourist traffic which was affected because of Indo-Pak war last year, again gathered momentum. It is expected that by the end of 1972 the tourist traffic would have risen to 325,000 numbers. In the last year of the Fourth Plan (1973-74), the targetted figure of 400,000 numbers is expected to be achieved in the light of the present flow of tourist traffic. The increase in the traffic this year is a result of various promotional activities undertaken by the Government strengthening the infrastructural facilities for tourism, including the inauguration of the kovalam Tourist Centre in Karala.

As a part of tourist development programme, plans for a new international air terminal at Dabolin(Goa) has been drawn up. The Rs. 4.1 million terminal complex is to cater to several international flights. M/s. Air India too propose to step up Boeing 747 operations on the India-UK-USA route to eight services per week from April 1973. It will help to increase the aircraft utilisation and ultimately reduce costs. As a measure of increasing the tourist traffiic, Air India expect to procure 9 more 747 Boeing after three years, in addition to the existing four already under operation.

The Indian Airlines during the Fourth Five Year Plan added 8 new stations to its network, namely, Nasik, Raipur, Jodhpur, Muzaffarpur, Dimapur, Tirupati, Gaya and Gwalior.

POLICY ON FOREIGN BRAND PRODUCTS

It is not the present policy of the Government of India to allow issue of shares by Indian companies to foreign collaborators exclusively for use of foreign brand names and trade marks.

India's remittances abroad are in the form of profits, dividends, royalties and technical know-how fees. In 1970-71, these amounted to Rs. 131.2 million, Rs. 434.8 million, Rs. 52.3 million and Rs. 206.3 million respectively.

BOKARO STEEL PLANT

The construction of the second stage of Bokaro steel plant with a capacity of 4 million tonnes is expected to be completed by 1975. It would require another three to six months for its commissioning.

The major part of equipment for the plant is to be indigenously supplied by the Heavy Engineering Corporation of India in public sector.

The Soviet Union has given credit amounting to Rs. 1660 million for the first stage and Rs. 700 million for the second stage of the Bokaro project.

FAO COMMITTEE ON COMMODITY PROBLEMS

The 47th session of the Committee on Commodity Problems was recently convened in Rome under the auspices of the Food and Agricultural Organization (FAO). The Committee considered among others the reports of inter-governmental groups and subsidiary bodies dealing with agricultural commodities such as foodgrains including rice, oil seeds and fats, jute, tea and bananas.

In respect of oil seeds, oils and fats, the progress of the Asian Coconut community was reviewed and the need for greater attention by FAO to provide assistance to the Community was stressed. The Community is a first step to ensure the interests of the concerned developing countries' exporters and is not indeed to harm the interests of world consumers. As for jute, kenaf and allied fibres, the Committee noted the informal price arrangements that are to be continued for 1972-73. India welcomed the report of the UNDP sponsored Mission on the possible establishment of an international centre for jute and kenaf and requested to accord priority to the study of new markets for finished jute products.

In regard to pepper also, it is emphasised that the establishment of the Pepper Community with India, Malaysia, and Indonesia as members should not be a cause for any misgivings on the part of the importing countries. The Community's aim is to provide for a healthy growth of pepper economy. On tobacco, it was decided that detailed consultations between the importing and exporting communities should take place with a view to examine the current situation and a long term deal for the commodity with reference to shifts in consumer preferences and special requirements due to health considerations.

SHIFTING OF FOREIGN PLANTS TO INDIA

The Government of India have so far approved four proposals to shift foreign plants to India. It has been specified that the plants shifted or proposed to be shifted are working plans and certificates regarding their existing good condition, reasonability of value and expected life were obtained from Chartered Engineers and Assessors of international repute.

Among the approved proposals, the items sought to be manufactured are LT Switchgears, Supershapers (machine tools), Internal Combustion Engines and hydraulic jacks and shock absorbers.

M/s. Easun & Sons Engineers (P) Ltd. are to purchase outright the LT Switchgear manufacturing plant from M/s. Ottermill Switchgear Co., U.K., at a value of Rs. 1.35 million. The transfer does not involve either foreign equity or royalty or engineering know-how fee. The entire production of Rs. 13 million worth of LT switchgears over a five-year period has been guaranteed for import into U.K. and third countries by the U.K. concern.

M/s. Kirloskar Brothers Limited, Sangli (Maharashtra) are to purchase the super-shapers (machine tools) plant from M/s. Butler Machine Tools Co., Halifax, U.K. valued at Rs. 470,000. Here also no foreign exchange is involved in the importation of this tooling. The collaborator has made a firm commitment for importing from India the entire output approximating Rs. 2 million worth of the machine tools for the first two years. As the sizes of super shapers to be supplied by India have gone off the production range of the U.K. firm, it is expected that, that country would continue to be the market for the concerned machine tools for a longer period. No foreign equity participation or royalty as a result of the transfer is envisaged. The Internal Combustion Engine parts plant is being transferred on a free loan basis to India for a period of ten years at the end of which the Indian transferee, M/s. Srivatsa Exporters, Madras, will have the option to repatriate the plant back to the U.K. firm, M/s. Norton Viliers. The U.K. transferrer will bear the freight charges. The export earning from the transfer is expected to be Rs. 1 million per annum initially to go upto a level of Rs. 20 million gradually. The entire production is to be exported. In this case also the transfer does not involve either foreign equity participation or royalty or engineering fee.

In the production of hydraulic jacks and shock absorbers, proposed to be effected by the transfer of plants from M/s. Janson Fabreiken N.V. Rotterdam (Netherlands), 75 per cent and 25 per cent respectively of the production is to be stipulated to be exported by M/s. Associated Engineering Works, 2740 Mirza Umrao Street, Kashmiri Gate, Delhi; the plant is to be purchased at the cost of about Rs. 1.16 million. The foreign company in this case will have a share holding of 40 per cent against which the payment for the plant could be set off. In addition, the royalty of 5 per cent on the sales will have to be paid.

All the above four proposals of shifting foreign plants to India have been sponsored by the Trade Development Authority, New Delhi. Yet one more proposal has been recently received by the Government of India from M/s. Alleppey Company Limited, Alleppey for the import of a running coir factory from M/s. United Sales Office of Coir Trade at Rotterdam (Netherlands). The proposal is under examination. The entire plant and machinery is offered as a package deal for a value of Rs. 1 million.

The United Nations Conference on Trade and Development have been urging the developing countries for some time to vacate industrial production of intermediate technology in favour of developing countries and to secure from the latter their requirements for such industrial products. The objective was reiterated in the Lima Declaration of the Group of 77 at Ministerial level in October 1971. The proposal was made by UNCTAD as a measure of export promotion in developing countries as also to release the employment potential among them largely for the manufacture of products of technological sophistication. Indeed, there has been a trend towards such shifts of industrial activity to a number of developing countries. The above examples testify the same. The importance of such package ttansfer deals would be that they would cut long lead time in developing the tooling and know-how for manufacturing the products for export to the standards and specifications needed in the transferrer country. Also in the process, the recipient country can witness a quicker generation of employment, production and export.

POSITION OF SUGAR PRODUCTION

India's total sugar production was 3.11 million tonnes in 1971-72, the share of Maharashtra was one million tonne which placed the State at the top.

In the recent years, Maharashtra's sugar production witnessed a clear uptrend. The figures of production are : 1.06 million tonnes in 1970-71 and 1.04 million tonnes in 1969-70.

Central Uttar Pradesh occupied the place of second best sugar producing state, with an output of 0.31 million tonnes in 1971-72, followed by West Uttar Pradesh at 0.30 million tonnes. The production figures of other states were : Andhra Pradesh 0.30 million tonnes, Tamil Nadu 0.29 million tonnes and Mysore 0.24 million tonnes.

The country exported sugar, sugar preparations and honey to the tune of Rs. 309.54 million in 1971-72 as against Rs. 294.47 million in the preceding year. Of this, the foreign exchange earning of sugar and honey was of the order of Rs. 308.56 million while that of sugar confectionery and other sugar preparations (except chocolate confectionery) was Rs. 0.98 million.

During 1971-72, USA, Canada, UK, Malaysia, Nepal, Yugoslavia, Sri Lanka, Kenya, Vietnam Republic, Netherlands, Japan and Belgium were the prominent destinations.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

ACTIVE CARBON FROM RICE HUSK

A process to produce active carbon from rice husk having low ash content and high absorption capacity, particularly suitable for pharmaceutical industry, has been developed by the Regional Research Laboratory (RRL), Hyderabad. Besides active carbon, the process results in yielding a by-product - a chemical called sodium silicate.

The process consists in screening the rice husk to remove extraneous matter and subjecting the screened material to carbonisation and steam activation at elevated temperatures in a rotary kiln. The activated material discharged from the kiln is collected in treatment tanks for silica removal. Washed active carbon is dried, sized and packed. The product obtained was found to be acceptable by the consumers.

The raw materials required for the production of active carbon are : rice husk and caustic soda, both of which are available in the country. Large quantities of rice husk are available in the country which are not at present being put to any industrial use.

The plant and machinery required are : rotary kiln, rotary filter, vacuum pump, tray dryer, hall mill, mixing tank, slurry pump, boiler, conveyor, waste heat recovery unit, and open pan evaporator. All these are available indigenously.

At present, a part of the active carbon requirement of the pharmaceutical industry is being imported. The process now developed, will not only make use of the rice rusk, presently being wasted but also will stop the import of active carbon and save valuable foreign exchange.

CHROME TAN CRYSTALS

A process to produce chrome tan crystals SB and SBO, the masked chrome tanning compounds, by which the basicity of chrome tanning bath can be automatically adjusted has been developed by the Central Leather Research Institute (CLRI), Madras.

By using these crystals in tanning, the leathers further do not require besification or neutralisation.

The process consists of (a) reduction of sodium dichromate into basic chromium sulphate at predetermined basicity, (b) preparation of the powdered crystal by drum drying and (c) masking and basification for obtaining self basified power extract.

The above two mix chrome tan crystal SB and SBO constitute one process upto the stage of preparation of predetermined basicity, say 33 per cent basic chrome sulphate. After this stage, varying treatments are necessary to make two distinct products, namely, chrome Tan Crystal SB and chrome Tan Crystal SBO.

The main raw materials required are : sodium dichromate, sulphuric acid, molasses, sodium and calcium carbonate, sodium bicarbonate, sodium hexametaphosphate, sodium sulphate, sodium phthalate, sodium lactate and sodium acetate. All are indigenously available.

The main items of equipment required are : lead lined reaction vessel, drum dryer, powder mixer, platform, balance, pump, tanks and material handling equipment. All these are available indigenously.

The advantages which can be derived by the use of these tanning compounds are that the mild initial tannage action resulting the fine and smooth grain is ensured. Secondly, their use provides freedom from supervision during the tanning stage and obviates the necessity of basification and/or masking thus avoilding pH control. Thirdly, these help in uniform distribution and fixation of chrome throughout the thickness of leather with better absorption and utilisation of chrome, minising the chrome content in spent bath. Lastly, these ensure desired fulness and uniform light colour of the tanned leather.

At present, the tanners are using ordinary unbasified chrome tanning crystals or liquors which require addition of alkali in the drum, during chrome tanning process, involving time, labour and risk of uneven chrome distribution, drawn grain and uneven colour. Whereas the chrome tan crystals SB and SBO are basified by themselves and addition of alkali etc. is unnecessary, thus eliminating extra time, labour and any risk to the product quality.

The estimated demand for chrome tanning compounds is about 5,000 to 10,000 tonnes during 1973-74. This demand is likely to increase in view of the increasing interest being shown by the tanning trade in chrome and retainning technology to satisfy domestic and export markets.

BED BLOCKS FOR BRIDGES

A technique for quick and economical replacement of bed blocks on bridges of raliway routes has been recently evolved by an Indian Engineer.

Bed blocks and bed timbers are used to evenly distribute concentrated loads coming on the girders at their bearings over the piers and abutments. The new method would use chemical resins like epoxy and polyester to bind bed blocks to the pier and abutment surfaces. Wornout bed timbers and cracks bed stones could be replaced by new reinforced concrete bed blocks in a single operation lasting four hours. In the conventional method, nearly a month was required for replacement.

The new technique has facilitated in running trains at the usual speed four hours after laying the new blocks, whereas previously the trains used to restrict their speed for a month. By employing this new technique, the Western Railway would be in a position to save Rs. 700,000 as there were 1300 bed blocks to be replaced over 35 bridges. Resin mortar was also ideal for the repair of concrete structures of bridges and the rapid filling of pot holes in concrete desks of road bridges and city roads.

SILICA GEL DEVELOPED

Silica gel which finds application mainly as a desiccant in various industrial applications, right from instruments to medicines in keeping the atmosphere dry and thereby protecting the instruments or medicines from corrosion, fungal growth or spoilage has been developed by the Regional Research Laboratory (RRL), Jorhat.

Other uses of silica gel are in the field of separating gases in petroleum refineries as a catalyst carrier in butadiene polymerisation in synthetic rubber industry. Once the gel is saturated with moisture, it can be regenerated by simple drying in an oven or with superheated steam. To indicate that the silica gel has attained moisture saturation, a colouring agent is sometimes incorporated in the gel which changes colour from blue to purple. The colouring agent generally employed is cobalt chloride which in its dehydrated form is blue in colour, but changes to purple when it absorbs moisture. The change of colour may be repeated time and again to indicate where the gel needs regeneration or not.

The conventional method of making silica gel involves preparation of sodium silicate from fusion of fine grained sand or quartz with sodium carbonate followed by digestion with water in an autoclave to get sodium silicate or water glass. The water glass is then treated with acids to get silica gel mixed up with electrolyte. This is then dialysed to remove the electrolyte from the gel. The electrolyte free gel is then dried to moisture content of 6 to 10 per cent to get the dried silica gel.

The new process involves the dilution of sodium silicate solution in water with desired concentration. The decationized silica sol obtained by passing Sodium silicate through a bed of cation exchanger is then passed through a column packed with anion exchanger. The silica gel obtained thereby is mostly free from cations and anions. The solution on keeping is gelified to a thick gel. The hardened gel after preliminary drying at 50-60°C was finally dried at 120°C in an electric oven. The gel so obtained is having a purity over 99 per cent and absorption capacity of the order of 42-44 per cent at 90-95 per cent relative humidity.

Silica gel for specialised use where high purity is one of the criteria is obtained after further processing of the gel obtained as above. The purity of gel after further treatment increases to 99.99 per cent. This can be utilized for chromatograph and other special purposes. The bulk density of the gel can be varied between 0.48 to 0.70 Kg./litre. The mechanical strength can also be varied.

The process is simple and does not require elaborate arrangement for dialysis and removal of electrolytes from silica gel. The gel prepared following in exchange method can achieve highest purity and can be utilized not only as desiccant but also for the separation of gases and in chromotographic analysis. The gelification of the sol does not require raising the concentration by heat treatment and the elimination of dialysis and separation of electrolyte from the gel make the process much simpler and the cost of the resultant gel will be invariably less.

Raw materials required for the production of Silica gel are Sodium silica, sulphuric acid and resins. All are available in the country.

Plant and machinery required are Sodium silicate tank, dilution tank, dionizer, filter tank, acid storage tank, resin exchanger, gelifying vessel, dryer and gel storage. All are available indigenously.

SPOTLIGHT ON MACHINE TOOL INDUSTRY

Development, diversification and modernisation are the three major facets of India's machine tool industry. Its output rose from a meagre Rs. 2.9 million in 1950 to an estimated Rs. 450 million in 1971. The installed capacity of the industry is currently valued at Rs. 700 million per annum. The percentage of imports to the total requirements of this industry dropped from about 62 per cent in 1966 to 33 per cent now.

From a modest beginner in the production of common purpose machine tools, the industry has added a striking range of tools in the course of the years. The range covers centre lathes, roll lathes, capstan and turret lathes, drilling machines including radial and multi-spindle types, milling machines, (horizontal, vertical and universal types) cylindrical grinders, tool and cutter grinders, horizontal and vertical spindle surface grinders, crank shaft grinders, gear hobbers and gear shapers, fine boring machines, shaping machines, slotting machines, planing machines, plate edge planers, metal sawing machines, power hammers, mechanical and hydraulic presses, guillotine shearing machines, seaming machines, nibbling machines, electric and gas welding machines including spot welders, submerged arc welders, seam welders, pneumatic tools, portable electric tools, wood working machines, wire drawing machines, plastic processing machines, shot blasting machines, die-casting machines, rolling mills, metal testing machines, cable making machines, sand moulding machines, induction heating equipment, various types of machine tool accessories, hydraulic equipment like pumps, valves and the like.

The foremost producer of machine tools in India, M/s. Hindustan Machine Tools (HMT) in the public sector has factories at Bangalore, Pinjore, Kalamassary and Hyderabad. Its production encompasses a wide range of common and special purpose tooling. Three other public sector projects are M/s. Machine Tools Prototype Factory at Ambarnath which is essentially meant to produce several types of tools for defence purposes, M/s. Praga Tools Corporation, Secundrabad whose production line covers some of the new types of tools and accessories and M/s. Machine Tool Corporation, Ajmer which is meant primarily to manufacture different ranges of grinding machines. Additionally, the requirements of heavier types of machine tools are being made from the Heavy Machine Tool Plant attached to the Heavy Machine Building Plant at Ranchi. Besides attending to the constant needs of development and diversification, the machine tool industry in India does not lag behind in scientific research, for it is on the basis of modern research that the progress of the industry stands. The Central Machine Tool Institute, Bangalore is one such research organisation in the country which helped improve existing designs and establish new standards. The Indian Standards Institution, is engaged in evolving high standards of international comparability for the wide range of tools produced in the country.

Supplementary to the efforts of the public sector projects, quite a few private manufacturers have specialised in specific areas of tooling including lathes, planers, milling machines, boring machines, drilling machines and special purpose machines. The quality of machine tools produced by some of the manufacturers is so high that many foreign manufacturers have their products built in India and marketed under different brand names. In all, there are 71 manufacturing units in the organised sector (1971) in addition to which there would be several small scale units.

The Machine Tool Industry in the country is still in intense phase of diversification and is expected to go in for far more sophisticated and special purposes machines. With the rapid development of the electronic industry in the economy, the machine tool industry is poised for more and more electronic tools and a beginning in this direction has already been made. Ag in consonance with the increasing use of numerica controlled machine tools in advanced countries, th Indian industry is not lagging behind. Some of th machine tools manufactured by HMT, for instance, ar indeed capable of using the numerically controlle system. The firm exhibited three of such machines a the Hannover Exhibition in 1970 : a mini-chucker fitte with a numerically controlled system, milling mach E.T.V. with the CMTI (Central Machine Tool Institute designed numerically controlled system and a digital Read-out again designed by CMTI. These beginnings augur well for further diversification is India's output of numerically controlled machine tools.

It is in the export field, that the machine tool industry in India has improved remarkable progress in recent years. From Rs. 1.5 million in 1961-62 to about Rs. 30 million in 1971-72, the foreign exchange earning by the Industry has gone a long way. The range of machine tools available for export includes lathes, boring, broaching, drilling and threading machines; milling, planing, shaping, gear cutting and slotting machines, grinding, lapping, honing, polishing, sewing and filling machines, metal farming machines, hydraulic presses, rotary shearers; punching, shearing, forging and rivet machines.

The importing countries include the industrially advanced economies of the world such as the U.S.A., U.K., Canada, Netherlands, Federal Republic of Germany, Australia, and New Zealand. The future of machine tools made in India in the international markets is certain in view of the growing trend of sophistication in this line of production and the consequent shifting away by industrial countries from labour intensive machines, specially those in the general purpose category. With its established competence in this line of export, India should contine to improve its export strength particularly due to the fact that its product diversification and modernisation are comparable those anywhere in the world.

The progress made by the industry which employs nearly 25,000 people, now has created a well trained technical force with high degree of skill and precision. Besides undertaking physical exports, India can now supply technical know-how and consultancy services in this line. ☐

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TRANSMISSION LINE TOWERS FOR EXPORT

Among the sophisticated lines of engineering production and export trade, transmission line towers made in India deserve special mention. Though this industry has entered the export market only recently, it has been by now established on a firm footing, not only in physical exports but in the supply of know–how to co-developing countries. Recent years have, in fact, witnessed a series of important export orders won by the Indian industry on the basis of global tenders in the face of stiff competition from renowned firms of industrially advanced countries.

A recent addition to the string of such export orders received by India's transmission line tower industry is the contract secured by M/s. Tata Exports Limited, Shivsagar Estate, Worli, Bombay–18, from the Electricity Generating Authority in Thailand for setting up a 99 kv 230 kv transmission line. Valued at Rs. 12 million, the contract involves supply of towers, insulation, hardware and accessories required for the setting up of the line as also technical supervision of the construction and erection in co-operation with a Thai firm, M/s. Thai Machinery Industry Company Limited, Bangkok.

With an installed capacity of 93,100 tonnes per year, the production of transmission towers in India is registering substantial growth every year. The output of the order of 50,235 tonnes (spread over fourteen manufacturing units) at a value of Rs. 90.43 million in 1970 increased to 62,025 tonnes at a value of Rs. 93 million in 1971.

According to the estimate of the Engineering Export Promotion Council, Calcutta, the export earning of transmission line towers and poles from India totalled Rs. 36.94 million (19,270 tonnes) in 1971-72 as against Rs. 13.20 million (9,850 tonnes) in the preceding financial year. Iran has been the foremost importer of these towers from India. Their imports have trebled from Rs. 7.12 million (5335 tonnes) in 1970-71 to Rs. 22.30 million (10180 tonnes) in 1971-72. Closely behind Iran was Thailand whose import from India amounted to Rs. 8.4 million in 1971-72; in fact, Thai purchases were only Rs. 0.85 million in 1970-71. Among other prominent importers of the towers from India are Libya (Rs. 3.2 million in 1971-72).

Mozambique (Rs. 1.9 million) and Kuwait (Rs. 1.2 million).

A prominent exporter of transmission towers in India, M/s. Kamani Engineering Corporation, Nicol Road, Ballard Estate, Bombay, have a production capacity of 60,000 tonnes per year. They have to their credit large export orders from several markets both among developing and developed countries. Special mention may be made of the orders that they have secured from Iran (SK-I contract and Tehran-Isfahan Contract), Thailand (the Sirikit Contract) and Libya (Tripoli-Homs Contract). Interestingly, their offers were selected against competition from renowned firms in Italy, Yugoslavia, Japan, United States, U.K., and West Germany on the basis of global tenders. The company's overall export performance during 1971-72 was of the order of Rs. 71.6 million. Their export earning during the first three quarters of 1972-73 (April-December 1972) was as much as Rs. 68.4 million. Besides transmission towers, the firm's export range includes power conductors, brass strips and rods, red lead, zinc oxide, reclaim rubber, electric transformers, steel tubes, dyes and chemicals, stainless steel utensils, processed foods, marine products, agarbatties and handicrafts. They have plans to expand soon their transmission line tower production capacity to 100,000 tonnes per year.

AMMONIUM CHLORIDE ON EXPORT STREAM

India's-chemical industry has come of age having to its credit the production of a wide variety of chemicals comparable to international standards. The exports of chemicals and chemical based products from India in 1971-72 totalled Rs. 72.32 million. Of this, organic chemicals netted Rs. 33.29 million while the share of inorganic chemicals was of the order of Rs. 39.05 million.

Among a large number of items being exported in this category, ammonium chloride, in recent years, is emerging as a promising item. There is a good demand from the developing countries, particularly in the African continent, for India manufactured ammonium chloride.

M/s. Fertilisers and Chemicals Travancore (FACT), Udyogamandal P.O., (Via) Cochin, a public sector undertaking, engaged in the manufacture and exports of a wide range of fertilisers and chemicals, have recently exported 20 tonnes of ammonium chloride bars and 10 tonnes of ammonium chloride powder to Iraq. The Kerala firm has already exported this chemical to as many as six countries so far. Iraq is another addition to the company's export list. Presently the company have confirmed export orders for 25 tonnes of ammonium chloride powder and 16 tonnes of bars from Iraq, in addition to the orders already executed. Yet one more export order from Sudan for 20 tonnes of ammonium chloride bars is to be executed soon.

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In 1971-72, the exports of ammonium chloride rom India were of the order of Rs. 55,210 (43 tonnes).

FACT was the first to introduce Naphtha Gasification process and the manufacture of complex fertilisers (16:20) during the second stage of the firm's expansion. In 1954, the firm adopted multiphased expansion programme for increasing its production and installed capacity. The end product pattern of the firm is: Ammonium sulphate 200,000 tons, Ammonium phosphate 135,000 tons, Ammonium chloride 25,000 tons, super phosphate 44,000 tons and fertiliser mixtures 350,000 tons.

PAPER CONES AND TUBES IN EXPORT TRADE

India's export trade in paper products totalled Rs. 29 27 million in 1971-72. Major importers were Afghanistan, Iran, Hong Kong, Arab Republic of Egypt, Thailand, Kenya, Saudi Arabia, Malaysia and Singapore. The present installed capacity of paper and paperboard stands at 880,000 tonnes per year and the actual production is in the neighbourhood of 760,000 tonnes.

Among the various paper products, paper cones and tubes are one of the products which have lately entered the export field. Recently M/s. Greaves Cotton and Company Limited, Forbes Street, Fort. Bombay, have been able to export over 1790 tonnes of paper cones and 8 million paper tubes to a number of countries including Australia, New Zealand, Arab Republic of Egypt, Sudan, Iran, Dubai, Sri Lanka, Mauritius, Uganda, Kenya and Ghana. The total export earning of the firm since 1965 amounts to Rs. 7.8 million. In recognition of their export performance, the firm has been awarded a certificate of merit for the years 1968-69 and 1970-71 by the Chemicals and Allied Products Export Promotion Council, Calcutta. The orders by the Bombay firm were won against international competition. The success of the firm in the export field has been due to the fact that paper cones and tubes manufactured by them are precision engineered.

SMALL SCALE INDUSTRY SECURES GLOBAL TENDER

A wide range of products produced and exported by India's small scale industries is a reflection of the overall competitiveness built by the Indian industry in recent years. The diversification of the products manufactured by the small industries in the country is such as would steal success even in securing global tenders in the face of stiff competition from renowned large scale industrial units abroad including the industrially advanced countries.

The success story of M/s. Azad Welding Works, Bulandshahr in seizing a global tender opportunity recently is only an example. The firm, a manufacturer and supplier of equipment for HT and LT overhead lines and accessories, have started looking for export opportunities abroad after establishing their position in the domestic market. The company has recentlywon a tender for the supply of 5000 numbers of bolts and nuts to the National Electricity Board, Malaysia. They were also awarded a tender for the supply of 2,000 numbers of flat cross arms and tension straps by the Trinidad and Tobago Electricity Commission, Port of Spain. The Commission is stated to have approved of the samples of the Indian firm after rigorous electrical and mechanical tests. The company further won two tenders for the export of 25,000 and 3,000 numbers of bolts and nuts subsequently. The importance of the global orders received by the firm is not so much in the foreign exchange value realised as the fact that they were able to withstand world competition before they were finally selected as the exporters.

EXPORT PERFORMANCE AND POTENTIAL

ENLARGED EEC AND IMPACT ON INDIA

Effective from January 1, 1973, the European Economic Community has been enlarged in its membership with Britain, Ireland and Denmark having formally joined the six founder-members of the Community. As a result, the estimated value of India's exports to be affected would be Rs. 750 million, with the commonwealth tariff preferences ending on the termination of the agreement with the U.K. This would work to nearly two-fifths of India's total export trade in 1970-71. The major commodities that will be affected are jute, coir, and oilcakes as these items enjoy duty-free entry into the U.K. market. It is, however, felt that although Britain has formally joined EEC, that country might link its tariff system with the EEC only with effect from January next year. It is to be hoped that an interim arrangement for preferential treatment to Indian goods exported to U.K. will be arrived at as a result of the proposed visit of India's Minister of Foreign Trade, Mr. L. N. Mishra to the U.K. for holding talks.

The Indian Government have been impressing both on the U.K. and the EEC on the need for finding satisfactory solutions to the trade problems even before the enlargement would take place so that the Indian exports might not be adversely affected. In February 1972, an *aide-memoire* was handed over to the British Government identifying the problems that would arise for various items of India's export interest and urging for finding suitable solutions. Unfortunately, however, there was no progress in this regard.

The United Kingdom is one of the largest markets for Indian products. The importance of this market for India would be evident from the fact that some 48 per cent of the unmanufactured tobacco, 37 per cent of tea, 26 per cent of woollen carpets, 24 per cent of cotton piecegoods, 24 per cent of oil cakes, 24 per cent of coir manufactures, 21 per cent of leather, and 21 per cent of sugar exported by India are consumed by the British market. The British membership of the Community will now mean an end to all preferences in that market and further Britain will be called upon to adopt the Common External Tariff of the EEC for imports from all non-member countries of the Community.

The arrangement proposed by the negotiating sides of the Community for the Asian Commonwealth developing countries was to the effect that "the Community will be ready after enlargement to examine with them trade problems (including the question of Indian exports of sugar to the enlarged Community), which might arise talking into account the scope of Generalised Preference Scheme (GSP) from which they would derive considerable benefit". It was thus assumed by the negotiating sides that the GSP would take care of most of the problems likely to be faced by India as a result of the enlargement of the Community. It is to be realised, however, that the GSP was evolved in the UNCTAD, independent of the problems that would arise in some of the Commonwealth developing countries consequent upon the enlargement of the Community. The GSP itself would involve sacrifices for the Commonwealth developing countries as they would be required to share their existing preferences with other non-commonweatlh developing countries in the U.K. market. Moreover, many of the items of export interest to India such as tobacco, cashew kernels, walnuts, coffee, turmeric, canned prawns, vegetables and tropical fruits were excluded from EEC's offers under GSP. In respect of manufactures and semi-manufactures forwhich complete suspension of duties have been agreed upon by the EEC, the concessions are subject to ceilings. It was against this background that the Indian Government handed over the *aide memoire* to the British Government, who in their reply stated that they did recognise that GSP would not compensate for the loss of trade advantages involved for India due to accession to the Community.

The first round of discussions with the British Government on the safeguard measures for Indian exports were held in mid-July, 1972. The second round took place in mid-September 1972. During the discussions, the British side agreed that in respect of items like jute, and coir goods where the EEC might agree to phase out the tariff over a period of time, it would be illogical for Britain to raise their tariff immediately after the entry into EEC. The question of safeguards f r Indian exports further figured in the discussions between the Minister in charge of EEC matters in the British Government and India's Minister of Foreign Trade in September 1972. The British side were fully apprised of Indian problems arising on account of the British entry into the EEC.

To the extent India's trade problems with EEC were resolved, the adverse effects of her exports following the enlargement would be no doubt mitigated. In the past, the Community granted certain trade concessions. But the question of providing better access to the Community market for some of India's most important items of export like jute and coir goods still remains unsolved. An *aide memoire* was also submitted by the Indian Government to the EEC Commission in September 1970 containing a proposal for a commercial cooperation agreement with the Community. Towards the middle of July, 1972, the EEC Commission approved in principle the idea of an agreement with India but the final outcome is still to take shape.

A brief commodity-wise study of India's export trade will reveal that textiles, jute goods, coir mats and coir matting are the major items that will be adversely affected by the Community's expansion and U.K.'s accession thereto. In regard to textiles, India has a quota of 11,500 tons a year for their export to U.K., under the international long term arrangement. The global ceiling under EEC's GSP for textiles is only 5,605 tons. Cotton textiles were not in fact included in U.K.'s offer under GSP. Regarding jute goods, India's jute yarn and manufactures have been allowed duty-free entry in Britain under commonwealth preferences. EEC tariff rates presently are 15 to 22 percent on woven jute fabrics, 17.5 to 20 percent on jute bags and sacks and 8 percent on yarn. Again, I ndia's export of carpet backing constitutes 20 percent of the total exports to Britain and EEC. There is an obvious case for an urgent reduction of EEC tariff to compansate for the loss of preferences in the U.K. market. Again, substantial reduction of EEC tariff is called for on Indian hessian, 75 percent of whose global export is in the direction of UK and EEC. Export of coir mats and matting from India will, now that U.K. has joined the EEC, be subject to a 23 percent duty in British market plus the most favoured nation rate of duty of 20 percent. Similar products from Belgium and Netherlands will have a preference amounting to 43 percent against India. Also, coir exports to EEC are subject to quotas, while there was no such restriction earlier in Britain. For canned prawns, India's main competitor in EEC, Denmark will stand to gain a preferential advantage of 23.5 percent over India. The above list of ill-effects on India's export trade is only illustrative.

EXPORT OF BASIC CHEMICALS AND PHARMACEUTICALS

Export trade in drugs and pharmaceuticals, dyes and intermediates; inorganic, organic and agro-chemicals; essential oils and crude drugs revealed interesting trends in the first eight months of 1972-73 (April-November, 1972). Their export value totalled Rs. 217 million as against Rs. 240 million in the same period of 1971-72 according to an estimate of the Basic Chemicals, Pharmaceuticals and Soaps Export Promotion Council, Bombay.

The group of drugs, pharmaceuticals and fine chemicals contributed Rs. 54.55 million in April-November 1972 while it was Rs. 76.12 million in the same period of 1971. Major items that are responsible for the drop in exports in this group were vitamins, anti-biotic preparations, emetine preparations, and anti-diabetic drugs and disinfectants. Exports of emetine preparations fell owing to a drastic decline in the world demand due to competition from synthetic emetine as also other new synthetic drugs. Among antidiabetic drugs, the introduction of alternative drugs abroad reduced demand for tolbutamide, which is the main item in this category exported by India. The drastic decline in international prices for Berberine Hydrochloride had an impact on its export. Overseas supply of disinfectants also fell particularly because of fall in demand among European markets.

While the offtake of drugs, pharmaceuticals and fine chemicals registered decline, improvements were noticed in respect of dyes and intermediates, alcohols and coal-tar chemicals; basic inorganic and organic chemicals including agro-chemicals; and glycerine, soaps, detergents, cosmetics and toiletries.

The export value of the group comprising dyes and intermediates, alcohol and coaltar chemicals rose from Rs. 28.12 million to Rs. 39.50 million. The foreign exchange earning of inorganic chemicals, organic chemicals and agro-chemicals improved respectively from Rs. 27.6 million, Rs. 6.7 million and Rs. 0.6 million to Rs. 30.4 million, Rs. 6.8 million and Rs. 1.1 million. The category of glycerine, soaps, detergents, cosmetics and toiletries netted Rs. 26.55 million against Rs. 25.36 million. Crude drug exports however, declined from Rs. 39 million to Rs. 24 million mainly due to the decreased offtake by U.S.A. of Psyllium Husk.

Export supplies of specific commodities that registered appreciable increases included strychnine salt/alkaloids, bacterial vaccines, potassium citrate, sodium salicylate, organic pigments, benzene, hydrochloric acid, Rare Earth Chloride, Bleaching Powder and Face Powder. The best performance among them was that of hydrochloric acid from Rs. 3.3 million to Rs. 7.12 million, essentially owing to the increased purchases of Abu Dhabi, Dubai, Bahrein Islands and Saudi Arabia. Increased overseas interest for India-made organic pigments was also evident, as its export value rose from Rs. 1.33 million to Rs. 5.42 million. The principal countries that increased their offtake for the pigments were Japan, Federal Republic of Germany, U.S.A. and Arab Republic of Egypt.

Rare Earth Chloride was yet another product whose export earnings moved up from Rs. 3.4 million to Rs. 5.3 million, Japan, Hungary, U.S.A. and U.K. being the primary purchasers. The export of bleaching powder at Rs. 1.4 million in contrast to a meagre Rs. 0.4 million rose due to the interest evinced by Burma, Sri Lanka, Kenya and Bangladesh. The Soviet Union was the major buying country of face powder whose exports totalled Rs. 2.3 million as compared to Rs. 1.3 million.

Quite a few products in the basic chemicals and pharmaceuticals group are essentially labour intensive and as such the industrially advanced countries have come to depend on the competent supplies from India at less expensive prices and assured quality.

CASHEW KERNEL EXPORTS EARN MORE

Exports of cashew kernels from India in the first eleven months of 1972 (January-November) amounted to 55,710 tonnes at Rs. 580 million in contrast to 54,735 tonnes valued at Rs. 555 million in the same period of 1971. U.S.S.R. was the foremost importer at Rs. 201.65 million (20,235 tonnes). U.S.A. which was the next best importer purchased 17,475 tonnes worth Rs. 191.50 million. The offtake by U.S.S.R. in the corresponding period of 1971 was Rs. 157.65 million while that of U.S.A. was Rs. 267.70 million. In terms of quantity the Soviet Union's intake in the period reviewed during 1971 was 16,380 tonnes and that of U.S.A. was 22,300 tonnes. This clearly reveals the increased purchases made by the Soviet Union while the U.S. imports declined substantially. Canada, U.K., Japan, GDR and Italy were the other important markets that improved their offtake.

Exports of cashew nut shell liquid for the first eleven months of 1972 amounted to only Rs. 4.48 million (3766 tonnes) in contrast to Rs. 7 million (6130 tonnes) in the same period of 1971.

India's import of raw cashew nuts during the first eleven months was of the order of 178,375 tonnes at a value of Rs. 288.8 million compared to 159,745 tonnes valued at Rs. 264.40 million in the corresponding period of the preceding year.

During 1971-72, India's exports of cashew kernels (60,620 tonnes) earned Rs. 614.80 million as against an export turnover of 50285 tonnes valued at Rs. 520.70 million during 1970-71. In the same year U.S.A. imported 45 per cent of the total exports while U.S.S.R. acounted for over 31 per cent.

EXPORT REVIEW OF HANDLOOM GOODS

Indian handlooms have picked up in their export performance in recent months. The first seven months of 1972-73 (April-October) witnessed foreign exchange earnings from these exports at a value of Rs. 182.82 million. This compares favourably with the export value at Rs. 151.59 million earned in the same period of 1971-72.

Cotton handlooms contributed most to this export growth and secured Rs. 139.38 million in contrast to Rs. 109.98 million. Of these, cotton made handloom fabrics of standard type fetched Rs. 54.29 million as against Rs. 50.86 million. The major increase of exports in this variety was in respect of Real Madras handkerchiefs at Rs. 17.73 million as against Rs. 12.73 million. Another important item in this group relates to Bleeding Madras whose exports fell from Rs. 6.20 million to Rs. 5.16 million. Other lines of cotton handloom fabrics of standard type exported are lungis and sarongs, dhoties, sarees, and shirtings. Lungis and sarongs fetched Rs. 11.95 million as compared with Rs. 17.22 million.

Cotton handloom (non-fabric) registered a fall in exports from Rs. 36.88 million to Rs. 29.58 million. The major decline was in respect of bedsheets and blankets from Rs. 19.90 million to Rs. 14.52 million. Other non-fabric varieties exported are carpets and durries, pillow covers and table cloth, towels and napkins.

In the line of readymade garments, overseas interest in cotton handlooms has obviously picked up, having registered a rise to the level of Rs. 55.5 million as against Rs. 22.24 million.

Apart from cotton handlooms, silk fabrics also witnessed dynamism on export front in the period under review while the total exports of silk fabrics fetched Rs. 42.19 million as against Rs. 40.33 million in the comparable periods. The share of mulberry silk fabrics improved to Rs. 36.15 million against Rs. 34.27 million; the rest of it was contributed by tasar silk fabrics.

RECORD MARINE PRODUCT EXPORTS

A sixtyfour per cent improvement in the export value of marine products was registered during the first ten months of 1972 (January-October) at Rs. 489.6 million (31.500 tonnes) as against Rs. 298.6 million (27,562 tonnes) earned in the same period of 1971. Quantumwise, the export improvement was about 14.3 per cent.

The major product that enabled the export growth was frozen shrimp while frozen froglegs and lobster tails also added to the export rise. The export value of frozen prawns and shrimps reached an all-time high of 25,819 tonnes valued at Rs. 436.6 million from 18,595 tonnes at Rs. 235.9 million - an increase of 7224 tonnes in quantity and over Rs. 200 million in value. The principal factor for the uptrend in the shrimp offtake was the emergence of U.S.A., as the best market in terms of quantity lifted, followed by Japan. The U. S. offtake was 14,110 tonnes worth Rs. 185 million while that of Japan was Rs. 226 million (9980 tonnes) in the period under review in 1972. Frozen shrimp exports to Western Europe and Australia also witnessed considerable improvement.

After a setback in 1971, overseas supplies of frozen froglegs again picked up in 1972. The first ten months of 1972 earned Rs. 14 million as against only Rs. 11.4 million recorded in the same period of the preceding year. U.S.A and France continued to be the major markets. Likewise the export performance of frozen lobster tails was also encouraging, the foreign exchange value having been nearly doubled at Rs. 10 million from Rs. 5.5 million; the entire exports were to U.S.A.

While the export performance of canned and dried prawns, dried fish, shark fins and fish maws registered decline, some of the minor fish items such as fish pickles, sea shells, fish oil, shrimp powder, cuttle fish bones, tortoise shells have come to be sought more by the international markets.

It is estimated that the total sea food exports in 1972 might cross the level of Rs. 560 million.

POLICY ON FILM EXPORTS

India's export trade in films has been rising from year to year. Its value improved from Rs. 31.3 million in 1964-65 to Rs. 50.15 million in 1971-72. Alongside the growth in the foreign exchange earning of films, the share of exports by the Indian Motion Pictures Export Corporation (IMPEC) has also picked up - from 0.19 per cent in 1964-65 to over 10 per cent in 1971-72. To further improve the share of public sector in film exports, the Government of India are considering the setting up of a Film Trading Corporation which is to handle the foreign trade in films.

Before November, 1972 export of feature films were allowed from India freely, subject to the registration of export contract by the Registration Committee constituted at Bombay, Madras and Calcutta and consisting of representatives of the film industry and the IMPEC. Since the above date, the export of feature films has been canalised. The imports of feature films were also canalised effective from August 1972 through the State Trading Corporation of India.

Import of films from U. S. was allowed under a special arrangement entered into by the Indian Government and the Motion Pictures Export Association of America (MPEAA). Under the agreement imports were allowed in favour of the member companies of the American Association in India. The agreement was last renewed in April 1968 and expired in June 1971. Under the agreement, the earnings of the films imported were held under blocked accounts in India except Rs. 2.5 million allowed to be repatriated by all the companies together per annum.

Owing to historical reasons, most of the films imported into India were in English language and had their origin in the U.K. or the United States. With the foreign exchange difficulties being increasingly felt in 1957, the Government of India had to exercise control over the import. The agreement with the MPEAA was not renewed since July 1971 as it was noted that the Association failed to take concrete steps in implementing the assurances given by them to the Indian Government with regard to the liquidation of the blocked accounts. They had neither spent the money on the location shooting of their films in India as stipulated, nor had imported the Indian films during the currency of the Agreement with the result that the blocked accounts swelled up to Rs. 45.5 million as by mid-August, 1972 as against Rs. 9.3 million by the end of April, 1962.

Import of films from U. K. was being allowed in favour of M/s. Rank Film Distributors of India Limited Bombay, under an agreement similar to that entered into with MPEAA. The agreement, which concluded by end of March 1967 could not be renewed since a change in regard to the composition and the structure of the Indian company had taken place.

An agreement with Sovexportfilm, Moscow and IMPEC was signed in 1968 which was renewed from time to time. The salient features of the agreement entered into with the Sovexportfilm are that Soviet Union would export to India films of length 1.5 million feet and import Indian films of minimum value of Rs. 0.8 million. The amount of realisation earned by the use of the imported films is to be utilised by the Sovexportfilm for covering the expenses in connection with the films in India. The balance amount is to be credited to the non-covertible rupee account of the U.S.S.R. in India.

JOINT VENTURES IN ENGINEERING ITEMS

As by the end of 1972, the Goverment of India approved 145 proposals for setting up industrial joint ventures abroad out of which 67 were related to the field of engineering industries.

Among the sixteen such engineering projects that have already gone on stream abroad with Indian assistance, five are in Malaysia, two in West Germany, two in Nigeria, one each in Kenya, Mauritius, Sri Lanka, Iran, Singapore Thailand and Saudi Arabia.

The field of collaboration comprises a broad range including razor blades, mosaic tiles and rolling shutters, sewing machines and electric fans, automotive spare parts and components, steel furniture, precision tools, enamelled copper wire and electrical accessories, time and automobile chains, cycle and industrial chains, automobile accessories, builders' hardware, oil engines, rice milling machines, hose clips and steel.

The total Indian equity investment in all the sixteen joint ventures is of the order of Rs. 30.15 million. In Malaysia alone, the Indian investment in the engineering products totalled Rs. 5.30 million. In West Germany, the investment for two projects, namely, oil engines and rice milling machines as also hose clips was Rs. 12. 53 and Rs. 0.7 million respectively.

TRADE PROTOCOL WITH BULGARIA

An Indo-Bulgarian Trade Protocol for 1973 was recently signed. Under the Protocol, the principal items of Indian exports will be machine tools, textile machinery, sewing and knitting machines, garage equipment, radios, electronic components, cables, bicycles, castings, steel ropes, surgical instruments, chemicals, paints, dyes, drugs and pharmaceuticals, vacuum flasks, plastic goods and linoleum. Additionally India will export the traditional commodities, such as, cotton textiles, handloom goods, carpets, leather goods, iron ore, coffee, spices, cashew kernels, jute manufacures, tanned hides and skins, finished leather, de-oiled grounnut and other cakes, coir yarn and products, Bengal Deshi cotton etc.

The Bulgarian exports will be mainly steel products, fertilizers, chemicals, besides machinery and equipment, non-ferrous metals, essential oils, photographic paper, dye intermediates etc.

The Protocol envisages a total trade turnover of Rs. 660 million between the two countries. The turnover was of the order of about Rs. 292.86 million during 1971-72. Of this, India's exports to Bulgaria totalled Rs. 154.80 million while its imports from that country were of the order of Rs. 138.06 million.

POSITION OF PLASTIC AND LINOLEUM EXPORTS

India's export trade in plastics and linoleums during the first six months of 1972-73 (April-September 1972) maintained more or less the same level as recorded during the corresponding period of the preceding year (April-September 1971). The foreign exchange earning was Rs. 28.88 million and Rs. 28.11 million during the periods under review.

Among the large number of items exported during the period, plastic moulded and extruded products constituted the major variety which netted Rs. 5.29 million as against Rs. 4.03 million. Plastic bangles was the next important variety, the export of which improved to Rs. 2.37 million from Rs 1.89 million. Linoleums (jute based and felt based) recorded a sizeable improvement to Rs. 4.85 million from Rs. 1.77 million. Polyethylene film sheets and bags (including woven sacks) constituted a promising variety of export and its foreign exchange value shot up to Rs. 1.93 million from a meagre amount of Rs. 0.1 million.

Besides these important varieties, the other items which recorded improvement during the period were: spectacle frames (Rs. 1.76 million against Rs. 1.71 million), laminates (Rs. 0.59 million against Rs. 0.23 million) and PVC rigid pipes and conduits (Rs. 0.39 million against Rs. 0.22 million).

An interesting development in the export of this category during the first half of 1972-73 was the revival of certain varieties including GRP manufactures, polyethylene rigid and flexible pipes, plastic dental products, metallised plastic products, rigid PVC sheets, plastic brushes, polyurethane foam and its products, nitro cellulose cloth and urea formaldehyde moulding powder.

The export value of other plastic categories in the corresponding periods of 1972-73 and 1971-72 were: foam leather cloth and sheetings (Rs. 0.22 million and Rs. 5.74 million); PVC sheets (Rs. 1.02 million and Rs. 2.33 million); general purpose polystyrene (Rs 0.17 million and Rs. 1.62 million); fountain pens, ball point pens etc. (Rs. 1.28 million and Rs. 1.94 million); handbags and other PVC fabricated goods (Rs. 0.52 million and Rs. 0.61 million) and polylined jute (Rs. 2.38 million and Rs. 2.98 million).

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

FACTS ON SYNTHETIC AND MIXED FABRICS

Synthetic and mixed fabrics are predominantly produced in India in the weaving and knitting units of decentralised sector with over 105,507 power looms spread over the country. Installed in about 11,000 units, most of which are small sized units holding 1 to 25 looms, this manufacturing sector has registered sizeable progress over the years. Additionally, there are about 146,000 handlooms operating on cent per cent man-made fibre and yarn and over 300,000 looms on the production of mixed fabrics containing mainly rayon staple yarn.

Knitting industry is also distributed mostly in the decentralised sector. Over 360 warp knitting machines and one hundred Raschel machines are presently operating in India accounting for the production of 64 million metres of knitted fabrics per annum. Besides, cotton mills are also manufacturing mixed fabrics under the diversification programmes of the existing units.

Production of synthetic and mixed fabrics has been steadily rising in India. The output of man-made fibre fabrics including mixed fabrics manufactured by cotton textile mills and the weaving sector of art silk industry totalled 1158 million metres in 1971, against 1017 million metres in the preceding year. Of the total production in 1971, the share of man-made fibre fabrics was 973 million metres while that of mixed fabrics by artsilk units was 125 million metres and by cotton units 61 million metres. The average annual growth rate for the production of man-made fibre and fabrics and mixed fabrics has been of the order of about 6 per cent per annum during the period 1966 to 1971. Due to the increased production, it is estimated that the total production might be in the neighbourhood of 1500 million metres by the end of 1973-74.

The growth of the man-made fibre fabrics manufacturing industry is mainly dependent on the availability of raw materials, namely, viscose staple fibre, rayon filament yarn, nylon and polyester filament yarn, polyester fibre and acrylic fibre. Indigenous production of man-made fibre and rayon has also been improving gradually. In 1971, the output of rayon filament yarn was of the order of 38,000 tonnes while that of viscose staple fibre was 61,000 tonnes, acetate yarn 1,920 tonnes, nylon yarn 10,350 tonnes and polyester fibre 5,500 tonnes.

In order to attain the production of 1500 million metres of synthetic and mixed fabrics by 1973-74, the requirement of man-made fibre and yarn is estimated at 158,000 tonnes. The present requirements on the basis of existing installed capacity in the weaving sector is 141,000 tonnes. To cover up the shortage, efforts are being made to increase indigenous production of man-made fibre and yarn by licensing new units and permitting substantial expansion in the existing units. In the meantime, the shortage in the availablity position is being made up by way of imports of synthetic yarn.

Presently, there is a voluntary agreement (since August 1969) between the weavers and spinners of rayon filament yarn under which the spinners agreed to supply 60.5 per cent of their production to the weavers on concessional prices and 10 per cent of the production by the exporting units at international prices. The validity of the agreement which is being extended from time to time is now upto the end of 1973.

In regard to rayon filament yarn and staple fibre yarn, the demand of the domestic weaving sector is mostly met indigenously. There is, however, a shortage being felt in respect of synthetic yarns (including nylon and polyester filament yarns), which is mainly attributable to the shift in consumer tastes for mixed fabrics of cotton/synthetic yarn/fibre. The consumption of blended fabrics has come to increase as a result of which the weaving sector in artsilk and cotton is taking to increased use of synthetic yarns. Thus, while the increasing synthetic yarn production in the country is keeping pace with the demand from the weaving sector, there is still a shortfall and the gap is being bridged by improved production and to some extent by imports of synthetic rayon through the State Trading Corporation of India, which is the canalising agency for import its.

STAINLESS STEEL INDUSTRY
A REVIEW

Notwithstanding the fact that a quantity of about 6835 tonnes is imported (1971), the stainless steel industry in India is able to meet the major portion of ever increasing domestic consumption rate and is even able to release export surpluses in certain categories of stainless steel manufacture. The Industry's authorised capacity, spread over 400 manufacturing units (60 of them being large and medium sized), is estimated about 30,000 tonnes per year. Besides the manufacturing units in the organised sector, a score of small scale establishments with polishing machines for utensils and cutlery are active in the country.

The stainless steel industry in India has been able to substantially diversify its range of production although it has started on a sound footing only recently. The industry today produces holloware, kitchen serving and dining utensils, hospitalware and surgical instruments. The articles are of numerous shapes, designs and sizes. The main categories of products are tumblers, 'katories', cups, saucers, heating pans, ladles, spoons, thalis (plates), wash basins, jugs, tiffin carriers, lunch boxes, containers, buckets, coffee filters, kettles, pots and drums. For hospitals, the chief items are furniture, operation tables, trays, bowls and sterilizers. Toilet pans, taps and hooks are also produced. Cafetaria trays made in India are popular. Recently, enterprising entrepreneurs have fabricated attractive tea/coffee sets, trays, ice-cream cups, frying pans, sauce pans, potato peelers, knives etc. in modern designs. These articles are in good demand in domestic and overseas markets.

Some of the stainless steel products produced in India have found their way in a number of international markets. Particularly, the kitchen utensils are sought after among East African and Arabian Gulf countries and some of the South East Asian markets particularly Sri Lanka and Malaysia. Stainless Steel holloware is exported by India even to U.K. and Canada owing to the growing demand there for the products of Indian style. The fact that a consistent stream of enquiries is received from sophisticated markets like the U.S.A., U.K., Canada, Australia bears testimony to the distinction of these products from India not only in terms of price competitiveness and quality but the design range and utility value. Even with the limited resources presently available with the industry, the export performance has been registering an uptrend over the years in the categories of utensils, hospitalware and surgical instruments.

The total value of the stainless steel utensils exported from India during 1971-72 was estimated at

Rs. 3.3 million, according to the Engineering Export Promotion Council, Calcutta. The major importers were Zambia, U.K., Singapore, Kenya, Hong Kong, Malaysia, Bahrein Islands, Fiji and Tanzania. In addition to the export of utensils, some quantites of watch straps and stainless steel sheets are also on export stream. While the U.S.A., Australia and Hong Kong are major markets for sheets, Democratic Republic of Yemen was the major market for watch straps.

In the range of stainless steel products available for export, solid stainless steel cutlery (tableware) deserves particlar mention. Even within a short span of their establishment, the factories engaged in this line of production have been able to enter overseas markets and export cutlery in the face of competition from Japanese goods in view of their advantage of lower prices and design variety. The existing production capacity of the cutlery factories in India is about 1000 tonnes per year. More than two-thirds of the actual production is reported to be on export stream.

With a capital investment of over Rs. 150 million and an employment of over 100,000 persons, the stainless steel industry in India is registering consistent growth.

PROGRESS AT MANALI INDUSTRIAL COMPLEX

With two giant industrial units, M/s. Madras Refineries and M/s. Madras Fertilisers as a nucleus point, the industrial activity at Manali in Tamil Nadu has grown into a notable industrial complex. Among the major industries that have received a boost in the complex are those which relate to the production of nylon tyre cord, transformer oil and carbon black. The ripple effect that came about in the complex has indeed had a healthy influence on the growth of inter-connected and inter-dependent segments of industrial output.

The Madras Refineries in the Manali Complex was originally established for refining 2.5 million tonnes of crude per year, but today their existing installed capacity is able to refine 2.75 million tonnes of crude. It is estimated that in the not too distant future, their capacity will even be improved to refine upto 3.5 million tonnes. The refining plant, in the chain of nine refineries that are operative in India today, is designed to produce 10,000 tonnes of liquid petroleum gas, 113,000 tonnes of motor spirit, 293,000 tonnes of naphtha, 30,000 tonnes of aviation turbine fuel, 384,000 tonnes of superior kerosene, 513,000 tonnes of high speed diesel oil, 563,000 tonnes of furnace oil, 200,000 tonnes of lube base stock, 80,000 tonnes of asphalt and 20,000 tonnes of sulphur. The Madras Refineries have by now reached their full rated capacity.

In 1972, the project achieved a record crude run of 2.65 million tonnes representing a 6 percent increase in design rate of 2.5 million tonnes. The through-put in 1972 also achieved a 24 percent increase over 1971 figure of 2.15 million tonnes. The production of base stocks for industrial and automotive lubricants also exceeded design capacity of 200,000 tonnes by about 54 per cent per year. The net foreign exchange saving to India due to the Refinery's production was around Rs. 100 million in 1972.

Record LPG production of 20,000 tonnes was also achieved during the year at double the design capacity. The production was 5000 tonnes in 1970 and 12000 tonnes in 1971. Asphalt production reached a new high of 248,0000 tonnes which was 3000 per cent higher than annual design capacity of 80,000 tonnes. Middle distillates comprising of aviation turbo fuel kerosene and high speed diesel and light diesel oil were nearly 160,000 tonnes each in 1972 - an increase of 20 per cent over 1971. Light diesel oil production over 100,000 tonnes was nearly double that of previous year. Total middle distillates constituted 44 per cent of the crude processed against the design figure of 37 per cent. Motor spirit production in 1972 was over 150,000 tonnes which was 21 per cent over the 1971 figure. About 168,000 tonnes of naphtha was supplied by them as feed stock to Madras fertiliser plant.

New products like axle oil for railway wagons, ink oil for printing ink, rubber extender and processing oils and turbine oils were developed by the Refinery during 1972 and are now undergoing consumer trials and testing. These are likely to save foreign exchange to the tune of Rs. 20 to 30 million annually.

The crude import for the Refinery is to register boost when two 80,000 dwt tonne tankers soon begin docking at the oil jetty in outer Madras Harbour. As a part of the programme of assistance to developing countries, the Refinery has deputed two senior technicians to Sri Lanka's Petroleum Corporation (Sapugaskande Refinery Kelaniya) for two years to train its personnel. One safety adviser has also been loaned to Homs Refinery in Syria for six months under United Nations Industrial Development Organisation Programme.

Having come as a close adjunct to Madras Refineries, the Madras Fertilizers factory in the Manali Complex is considered to be one of the largest fertiliser units in the entire South East Asia. It is scheduled to produce 243,000 tonnes of ammonia, 210,000 tonnes of urea and 360,000 tonnes of complex fertilizers per year. The unit, which was set up by the Indian Government in collaboration with the American International Oil Company, has gone into production since November 1971.

Yet another petrochemical unit that has come up at Manali is Nagpal Ambadis unit for manufacturing transformer and speciality oils. The main production line of the company, namely transformer oils, which is mostly used as an insulating medium in electrical equipment, is to be produced to the tune of 15,000 tonnes at its rated capacity. The speciality oils being produced by the unit have wide application in pharmaceutical, cosmestic, and toilet industries as also veterinary preparations. Another industrial unit that has come up in the area, M/s. Kamani Carbon Black, is to produce this product which is an important ingredient for the production of automobile tyres and industrial rubber goods. The annual demand for carbon black in India is estimated at 120 million lbs. (55,000 tonnes). At present, there are only two units producing the Black with a combined installed capacity of 90 million lbs. The Kamani Unit is expected to meet the pending gap, once it goes on production stream.

Nylon Tyre Cord is yet another item to be manufactured in substantial quantity at the Manali Complex. A unit under the organisation of M/s. Delhi Cloth Mills which is to come up in the complex is proposed to produce 4500 tonnes of nylon tyre yarn per year. It is hoped that major raw material for the yarn, caprolactum which will have to be supplied from Koyali Refinery (Gujarat) initially, might also be available at Manali itself in the course of time.

In addition to the industrial units that have come up or are to take shape in the near future at Manali, there are also plans to locate a petrochemical complex under the auspices of Tamil Nadu Industrial Corporation Limited which proposes to produce ethylene, propylene, butadiene, polythene, polypropylene and gasolene in sizeable quantities. Import substitution of butadiene and gasoline is expected to be effected by the proposed unit to save current outflow of foreign exchange.

RISE IN HINDUSTAN STEEL OUTPUT

India's public sector steel plants under the management of M/s. Hindustan Steel Limited have recorded the highest level so far of production and despatches during 1972. The combined output of the three mild steel plants of the company stood at 3.9 million tonnes of ingot steel and 2.9 million tonnes of saleable steel, the highest ever for any calendar year. The previous best of HSL's performance was 3.76 million tonnes and 2.74 million tonnes.

The Bhilai Steel Plant reached new high during 1972 at a production level of 2.05 million of ingot steel and 1.74 million tonnes of saleable steel as compared to the previous best of 1.96 million tonnes and 1.53 million tonnes respectively during 1970. The output from the merchant mill and cast iron section of the Foundry at Bhilai Steel plant exceeded annual rated capacity levels. Despatches of 1.74 million tonnes of saleable steel from the Bhilai plant during 1972 were also the highest so far as against 1.51 million tonnes in 1969.

At Durgapur steel plant, production of 0.72 million tonnes of ingot steel and 0.42 million tonnes of saleable steel was better than the corresponding figures of 0.64 million tonnes and 0.41 million tonnes in 1971. Similarly the despatches of saleable steel were higher in 1972 as compared to the previous year.

SPECIAL STEEL PLANT AT KANPUR

A special steel plant, estimated to cost Rs. 500 million, is to be set up in Kanpur by the Government of India. The special plant will include steel melting and rolling facilities and will have an installed capacity of 17,000 tonnes of finished products.

The consultancy services for the detailed engineering project supervision and commissioning of the units for the plant have been entrusted to an Indian organisation itself - the Central Engineering and Design Bureau (CEDB) of the Hindustan Steel Ltd. An agreement to this effect was recently signed between the Hindustan Steel Limited (HSL) and the Director General of Ordnance Factories, Calcutta.

The Agreement also envisages major utilisation of indigenous equipment. The rolling mills for the plant will be designed by the United Wing of CEDB and fabricated by indigenous fabricators.

Under another Agreement between the Engineering Projects Ltd. and Hindustan Steel Limited, CEDB have also been appointed as consultants for a 5A Coke Oven Battery at the Durgapur Steel Plant in the public sector. This agreement stipulates that all future coke ovens in Hindustan Steel Limited will be supplied and erected by Engineering Projects Limited on the basis of design developed and supplied by CEDB.

INDIA DEVELOPS A NEW GUN DETECTOR

Electronics and Radar Development Establishment (ERDE), Bangalore has recently designed an electronic equipment to obtain the exact location of enemy guns. Known as sound ranging system, it consists of seven microphones, a lines testing unit, amplifier cum power supply unit, seven channel pen recorder unit, two advance posts units and accessories. The microphone is very sensitive to frequencies of guns and mortars and can pick up true 'signatures' of different weapons.

The radio link sub-system consists of ten transmitters, sixteen receivers, twelve control units, sixteen antenna tuning units of accessories. The Radio link increases reliability of the whole system and speeds up base development, increasing the mobility of the complete machanism.

The computer sub-system consists of digital computer and power supply unit; the computer speedily computes location of enemy guns and displays 'coordinates' of located weapons. It outdates plotting board and gives great accuracy in computation. The sound ranging computer is the first digital computer designed in India for use.

The system can locate enemy guns at distance of 30 km. with accuracy of fifty to one hundred metres. The system designed by (EDRE) is estimated to cost Rs. 600,000 per piece. If imported it would have involved a foreign exchange drain of Rs. 2.5 million.

MANUFACTURE OF GEAR WHEEL

The Heavy Electricals Ltd. (HEL), Bhopal, the State owned undertaking, has recently developed a resilient gear wheel for the use on tractor motors fitted on 4200 HP, 1500 volts DC locomotives operating in the Bombay region. The manufacture of the developed gear has already been started by the Bhopal plant.

The development and manufacture of these gear wheels and pinions at Bhopal is expected to save considerable foreign exchange for the country. HEL is already manufacturing traction motors for railway electrification and dieselisation programmes.

COMMERCIAL EXPLOITATION OF NEW SCIENTIFIC PROCESSES

The National Research Corporation of India have witnessed an eventful year in 1971-72 as a number of their processes have gone into production saving considerable sums of foreign exchange for the Indian economy. The approximate value of products produced by the licensees of the Corporation was Rs. 67.5 million in the year, as compared with Rs. 60 million in 1970-71.

Among the major processess developed by the NRDC that went into production are electrolytic photocopying machine, bromine, catechol, tertiary butyl catechol, fatigue testing machine, phenylacetic acid and phenylacetamide, benzyl cyanide, compaction piles, unevenness indicator, T.V. Antenna, and Ceramic pick-ups. The foreign exchange saving on these processes is expected to be the order of Rs. 25 million per year. In the same year, the Corporation initiated the development project for the recovery of potasium chloride from distillery spent wash in collaboration with Messrs Daurala Sugar Works, Daurala (U.P.). Again, seven projects worth Rs. 4.1 million have been taken up for development in collaboration with the indigenous industry viz. vibrating staking machine, splitting machine, auto-stitching machine, development of 230 kv and 400 kv power transformers, other electrical equipment, Pulse milling equipment and Liquid fuels from coal.

Among other projects that the Corporation is considering for implementation are for the development of dimensionally stable anode small tractor, fused silica ware, machine tools, plastic processing machinery, leather processing machinery and synthetic diamonds.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PROCESS FOR DECUTICLING OF SESAME SEED

The cuticles or skins of the sesame seed are tough and known to contain the toxic oxalic acid, acid insoluble ash (silica) and crude fibre which are undesirable constituents. The brown or black colour of the cuticles renders the sesame products less attractive. Therefore, the decuticling of sesame seed has assumed great importance. Decuticled sesame seed and its meal are preferred in food and confectionary industries to original seed itself because of the better taste and non-toxicity. Expressed oil from decuticled seed is preferred to that from whole seed in view of its light colour and absence of bitterness. So far no standard method of decuticling, which is mechanical and continuous, is known and decuticling is done manually which is time consuming cumbersome unhygenic. Treatment of seeds with chemical solutions under heat has been known to disentangle the cuticles from kernels, but such a treatment is rather drastic and difficult under the conditions in which most of the oil mills are working in the country.

With a view to making the process simple and more economical as well as mechanical and fast investigations were undertaken at Oil Technological Research Institute (OTRI), Anantpur and a process for decuticling of sesame seed has been successfully developed. The process consists of soaked the sesame seed at different moisture levels, for different periods, with or without wetting agents, passing the soaked material between two discs, one of which is stationary and the other rotating. Decuticled seed are washed under a spray of water and dried either in the sun or in artificial driers. Decuticled seeds can be crushed to give oil with little or no bitter taste. The light coloured cake can also be extracted for oil, producing light coloured meal satisfying the ISI specifications for edible sesame flour meant for human consumption. The yield of decuticled seed is about 85%. The oil and protein contents of properly decuticled seeds are 60% and 24% respectively, as against 50% and 21% of the original whole seed. The free fatty acid content of oil extracted from decuticled seed is not adversely affected by the process of decuticling. The effectiveness of the process depends on the moisture level, time of soaking, addition of wetting agent, mode of washing and drying the decuticled seeds.

The process developed by OTRI is simple, mechanical and continuous. The process does not involve the use of caustic chemicals and heat and is more hygenic. This method renders the decuticling easy on a larger scale and enables to meet the demand of food and confectionery industries.

Investigations have been carried out on 500 Kgs. batches of seeds at a time. A number of runs lasting for some weeks were conducted. Several runs have been made to standardize the process.

Although, no consumer acceptability trials have been conducted but since the decuticled seeds are well known to be edible and protein rich, it is assumed that decuticled seeds will be quite popular and acceptable to all. In fact, the decuticled seeds would be preferred for better quality oils produced from these and the light coloured meal which is edible.

Sesame seeds is the main raw material required for the process. These are indigenously available.

Any conventionl oil mill with a few additional items of equipment which are quite simple can carry out the production of decuticled sesame seeds with advantage. These can be either sold in the market as such or can be further processed for the expression of oil by the oil mills. The main items of plant and equipment which may have to be added are dischuller with motor, wire mesh screens, spray funnels and seed dryer. All these are indigenously available.

COCONUT HUSK CHOPPING MACHINE

A coconut husk chopping machine has been recently developed by the Central Building Research Institute (CBRI), Roorkee, U.P.

At present, particle boards are made from chips of wood, bagasse and paddy husk. Manufacturing such boards involves the use of large quantity of imported adhesives. Substantial cost reduction is possible, if coconut husk having self binding properties is used for making particle boards. Currently a huge quantity of coconut husk is being wasted every year. The CBRI has developed a machine which performs the chipping of the coconut husk without the separation of the pith. It was observed at the Institute and at Forest Research Institute, Dehradun, that if coconut husk is chipped without its pith being separatted, good quality particle boards can be made using these chips with little or no adhesive. The pith embedded in the coconut husk fibres contains reactive ingredients which during the process of making particle board, undergo a chemical change and impart sufficient bond strength between the chips to form a strong board, thereby avoiding or minimising the requirement of resin adhesive. The machine developed comprises of two sub assemblies, feeding head and cutting head, both these heads being powered by separate motors. Necessary arrangements have also been made in the machine for an easy adjustment for getting chips of different thickness required for specific purposes.

The developed machine has been tried extensively and the performance was found satisfactory.

The machine has been fabricated by using all indigenously commonly available parts. Any small scale industry having the facilities of casting machine shop, welding etc. can take up this process.

The output of the machine is related to the speed of the feeding. An average output of nearly 75 kg. per hour is possible with the machine. The maximum horse power required by the machine is 5 H. P.

DEVELOPMENT OF BERBERINE HYDROCHLORIDE

A single process for the manufacture of Berberine hydrochloride from berberis lycium royte has been developed by the Regional Research Laboratory (RRL), on Jammu, recently.

Berberine hydrochloride finds application in the preparation of drugs for diarrhoea and eye troubles. Exact internal demand or consumption is not known but the product has export potential particularly to Japan.

The process developed on pilot plant scale by RRL uses root and root barks of berberies plants as the raw material. This plant grows in plenty in the North west Himalyan region. The machineries required mainly consist of disintegrators, S.S. jacketted vessels, centrifuges, S.S. trays, wooden vats etc. all of which can be fabricated indigenously.

FLEXIBLE MAGNETS

A process to manufacture flexible magnets has been developed by the National Chemical Laboratory, (NCL), Poona, recently.

Flexible magnets are at present mainly used in refrigerator door gaskets. In addition, they also find application where price is the main consideration and low energy product can be tolerated. These magnets are not, at present, manufactured in the country, so their demand has not grown to the full extent. The estimated requirement, if the product is made in the country, is about 2 million ft. of various widths valued at about Rs. 1.5 million.

The process consists of hot rolling in required quantities of binder and lubricant with continuous addition of ferrite till the mass becomes homogenous. The lumps are pulverised and hot extruded according to the required dimensions. The strip is then surface-magnetised in a specific way to give the maximum attraction and holding power. The NCL process has been developed on 500 gm. scale per batch. The extrusion has been carried out in small pieces of 1-2 ft. length. The product has certain specifications viz. ferrites : Binder (Polymer), Ratio : 87 : 13 by weight, Remanance, (BR): 1400±50 Gauss, Coercivity (HE) : 1200±50 Oersted, BM (Max): 0.40 MGO and Density : 3.4 gm/cc.

The above properties as also the flexibility, hardness and other physical properties match with the imported samples.

Raw materials required for the process are barium-lead-strontium ferrite of 1-5 micron size, a suitable polymer, plasticiser, etc. Hot rollers, extruder or press (high temp. 200°C); weighing machine (platform type 0.1 per cent accuracy), pulveriser, magnetiser and testing equipment are the important items of plant and machinery. All these are indigenously available or can be fabricated in the country.

PROTECTIVE COATING FOR REINFORCEMENT

Central Building Research Institute (CBRI), Roorkee, has developed a protective coating for reinforcement. This coating can be manufactured from indigenous raw materials and gives satisfactory protection against corrosion.

Mild steel reinforcement in cellular concrete which is manufactured by autoclaving certain siliceous materials, a calcareous binder and a foaming agent and is very porous—is prone to corrosion during the autoclaving, as also in normal exposure and more so in industrial and marine atmosphere.

At present, the concerns manufacturing reinforced cellular concrete precast units in the country, like Hindustan Housing Factory or Cellular Concrete Unit of Tamilnadu Housing Board, do not have the know-how, in regard to the protection of reinforcement. One firm in Poona is using foreign know-how. So it can be said that the new product will get a ready application in the field.

The product had been put to rigorous testing. The electrochemical measurements made under corrosive environments and salt exposure test, in accordance with the German Standard DIN-4223, show that the coating will provide the reinforcement adequate protection. It has also been found that the coating improves the bond between steel and concrete.

The pilot plant trials for the manufacture of protective coating were carried out by mixing 10 Kg. of portland cement and other required materials in water, in a high speed mixer. The yield was about 12 litres, which is the minimum economic batch. The slurry, thus prepared would be ready for use after 12 hours. The slurry remained stable for about 24 hours. The quantity was sufficient for coating 400 metres of 6 mm diameter bars, i.e., 7.5 Sq. metre of steel area.

The plant and machinery required for the product are mixer with 12 litre capacity, 300 R.P.M., diesel prime mover and a tube mill for grinding portland cement to fineness of 4000 sq. cm./gm.

Other equipments include a physical balance, measuring vessels, containers of 12 litre capacity and heating source. They are available from standard manufacturers.

Raw materials required are : Portland cement, Natural rubber latex, Casein, Sodium carbonate and Ammonia.

No. import—initially or recurring—is required for the manufacture of the coating.

PROGRESS IN SPACE RESEARCH

Although India has no ambitious space programme of moon-landing, it hopes to succeed in satellite launch capability with its immediate objective of space technology for communications, television transmission and meteorological forecasting.

It was in November 1963 that India's first rocket, a Nike-Apache supplied by National Aeronautics and Space Administration (NASA) of U.S.A. and carrying a French payload in its nosecone, went up from Thumba to probe into the mysteries of space.

India decided to join the world space research community in April 1972. The Indian National Committee for Space Research (INCOSPAR) was constituted by the Department of Atomic Energy (DAE), Government of India, for the promotion of space research and international cooperation in exploration of space for peaceful purposes. With the creation of the Department of Space and the Space Commission by the Government of India in July 1972 further national development is envisaged. The five units, Thumba Equatorial Rocket Launching Station (TERLS), Space Science and Technology Centre (SSTC), Rocket Propellant Plant (RPP), Rocket Fabrication Facility (RFF) and the Propellant Fuel Complex (PFC) are jointly designated as the Vikram Sarabhai Space Centre (VSSC) of the Indian Space Research Organisation.

TERLS was established in 1963 at Thumba on the West Coast of India (near Trivandrum) and almost on the magnetic equator. Its objective is mainly to carry out scientific studies of the upper atmosphere in equatorial regions, from 30 to 200 km. altitude, using sounding rockets. The station, which is U.N. sponsored one, became operational in November 1963. Already bilateral agreements between India and many countries were signed for international cooperation for conducting scientific experiments from Thumba. TERLS has an average elevation of 5 metres above sea level. The impact area lies on the sea and ranges upto 200 km from the shore. On land, the range is limited to a semi-circular area of about 1000 metres radius. The facilities created at Thumba as well as the sounding rocket experiments launched from this site were provided partly through the cooperation of NASA, the Academy of Sciences of the U.S.S.R., the Centre National De'Etudes Spatiales of France and the space organisations of other countries like the U.K., Federal Republic of Germany and Japan.

Experiments have been carried out from Thumba for the study of the dynamics and composition of the upper atmosphere in the equatorial latitudes. The payloads include vapour cloud to measure winds in the neutral atmosphere using sodium, trimethyl aluminium and barium techniques; electronion probes and plasma noise probes for study of the nature of ionosphere; UV detectors and ion-mass spectrometers to measure the composition of the ionosphere; X-ray astronomy payload for measurement of X-ray flux emanating from distant stars like Scorpio, Centaurus, Crab etc. in the celestial sky and chaff to measure winds in the mesosphere.

TERLS participated in the world synoptic launchings carried out in 1965 for measurement of upper atmospheric winds using sodium techniques. A series of launchings consisting of several comparative studies of rockets and their payloads, sponsored by the World Meteorological Organisation (WMO), is being planned for March and April 1973.

The Space Sciences and Technology Centre is the research and development unit of the Indian Space Research Organisation with the twin responsibilities of conducting research and development on systems and their components required in space research and for carrying out prototype design and pilot production of equipment products resulting from the research and developmental activities. The systems and their components include the rocket vehicle, scientific payloads and backup experiments, instrumentation, telementary for both communication and command and ground support systems. The principal task of the Centre (SSTC) is to indigenously develop a satellite launch capability. This is not only of relevance for scientific exploration but also for many applications of outer space in the fields of communications, meteorology and remote-sensing. The first launch is to attempt to place a satellite of about 40 kg. in a near circular orbit of about 400 km. The launch vehicle which is being developed is to have four stages with an approximate weight of 20 tonnes and of a length of 21 metres. Special materials and methods of construction involved in advanced aerospace engineering are being developed for use in the rocket motors. Propellants of high performance are now produced and these have been flight-tested in smaller rockets. Electronics and instrumentation which can stand extreme environmental conditions such as acceleration many tens of times the force of gravity, needed for the first launch mission, are flight tested with sounding rockets. Extremely rigorous procedures are involved for quality assurance at all stages of procurement and construction and also for testing these under simulated conditions. The first launch is expected to be followed by launch vehicle using more powerful motors. The SSTC aims at developing by 1980's a launch vehicle capable of putting 800 kg. satellite into a synchronous orbit at 40,000 km. This is the type of capability which is needed to fully exploit on the basis of indigenous know-how, the vast potential arising from the practical applications of space science and technology.

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The development of a system as complex as a satellite launch vehicle requires complete mastery of the technology on each of the sub-systems involved. The thrust of the programme at the Centre (SSTC) during the past years has been to grow this capability. RH-75, RH-125 and its multistage combinations as well as Indian made Centaure rockets have been successfully completed. RH-100, useful for meteorological observations is nearing completion. RH-300 has been flight-tested and the slight testing of RH-560 is to soon commence.

The Rocket Propellant Plant which was commissioned in early 1969 was originally set up to process French Centaure rocket propellants, Subsequently the plant has been supplying propellants for indigenous satellite systems also. The development group of the plant has already brought out a series of new propellant formulations using a variety of fuel binders and additives. Simultaneously, certain related products like burning rate accelerator and insulating liner were also developed. The plant is also the supplier of propellants for other national agencies. With the completion of the expansion programme (phase I) its capacity has increased fourfold. Most of the raw materials imported so far have been substituted with indigenous raw materials. A propellant grain weighing 700 kg., the heaviest ever in the country, was cast in the plant.

The rocket fabrication facility (RFF) was set up in early 1971 for the manufacture of rockets and other hardware for space research application. It has capacity to produce rocket motors up to 600 mm diameter. Facilities for fibreglass and strip wound products are also available at the facility. The production of Centaure (IIA) rockets is in full swing and the present production range is two rockets per month. Facilities are being augmented for producing the hardware required for the satellite launch vehicle, presently under development at the Space Sciences and Technology Centre (SSTC).

Preliminary construction work is underway at a site within the Thumba area for a propellant fuel complex. The complex when complete, is to manufacture the raw chemical materials needed for the preparation of a solid propellant in addition to some of the chemicals required for liquid propulsion.

India has thus started a modest space programme and even within a decade of its existence, it has developed competence in indigenisation of rocket fabrication, rocket propellants and payload systems. With its limited resources, India hopes to succeed in satellite launch capability with its immediate objective of space technology for communications, television, transmission and meteorological forecasting. ☐

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ILMENITE TO JAPAN

India's export trade in ilmenite of a quantum of 53,437 tonnes totalled Rs. 11.78 million in 1971-72. U.S.A. was the foremost buyer at Rs. 7.85 million, while Japan imported Rs. 3.53 million worth. Belgium, Sweden, U.K. and Italy were the other importers.

Recently, M/s. Indian Rare Earths Ltd., 111, Maharshi Karve Road, Bombay-20 (BR), a Government of India undertaking, have entered into a contract with a Japanese firm for the supply of over 100,000 tonnes of ilmenite per year for a period of five years. The company bagged the contract against stiff competition from Australia, notwithstanding a major handicap, namely, that the company can ship the mineral only during five months in a year. The firm exported about 3000 tonnes of this mineral to U.S.A. in the current year.

Despite the fact that there is a world glut, the firm also succeeded in exporting 3500 tonnes of zircon in recent months. They are also committed to supply 4,000 tonnes of rare earth chloride to U.S.A., Japan and European countries by the close of the current financial year, 1972-73. All these transactions are estimated to earn over Rs. 18 million in foreign exchange in the current financial year.

SUGAR MILL MACHINERY AND EXPORT EFFORT

The Indian industry today has an efficient and organised production base for the manufacture of a broad range of industrial machinery like sugar, cement, tea, paper, chemicals and pharmaceuticals, coal-mines and coal washery, fertilizers, dairy, food processing, leather, metallurgical and steel mill machinery. Not only the growing domestic demand for these varieties is being met fully but sizeable surpluses are released for the export market.

The sugar mill machinery industry is one of the prominent areas of the industrial machinery group which has been fully established by now. Its production has been continuously growing during the last two decades. The output value was less than a million rupees in 1951 and it rose to as much as Rs. 162 million in 1971. The industry has also attained a superior degree of indigenous content; for a complete sugar plant of 1250/2000 tonnes of crushing capacity per day, the present import content is only about 8 per cent of the total value of the complete plant. The manufacturing units engaged in the industry are now gearing upto fabricate and supply sugar plant upto 3000/4000 tonnes per day crushing capacity. There are seven major units which are manufacturing complete sugar plants and 49 units that can produce various items of sugar mill machinery with an installed capacity of the order of Rs. 230 million.

India's export earning of sugar mill machinery during 1971-72 was estimated at Rs. 11 million, according to the Engineering Export Promotion Council, Calcutta. Sugar plants and sugar mill machinery were mainly supplied to Uganda, Iran, German Federal Republic, Sri Lanka, Kenya and Sudan. Sugarcane crushers were exported, among others, to Nigeria, Libya, Liberia and Madagascar.

In addition to the large scale manufacturers in the line, several small-scale firms have successfully entered this field of production and export. One of such firms, M/s. Kay Iron Works, Yamunanagar (Rajasthan) secured a foothold in overseas markets. They started their export effort in 1962 and since then their overseas supply has come to earn increasing sums of foreign exchange. The total value of their exports of sugar mill machinery during 1971-72 was of the order of Rs. 0.32 million. Their machinery have already been installed for the sugar mills in East Africa and it is reported that the machines supplied have been giving satisfactory service.

The Yamunanagar firm specialized in sugar mill rollers. They are in a position to undertake the supply of big size rollers (37½" dia × 78" length or 95 cm × 198 cm), weighing about 50 tonnes. The firm is also a manufacturer and exporter of paper, cement and chemical machinery, structurals, MS and stainless steel and steel fabrication work.

Another Indian firm had earlier undertaken to export sugar diffuser to Malaysia. The Indian firm, M/s. Larsen & Toubro Limited, Dougal Road, Ballard Estate, Bombay supplied the diffuser to the State Development Corporation of Negeri Sembilan Estate, Malaysia. Yet another Indian firm M/s. Phaltan Sugar Works Ltd. 296, Bazargate Street, Fort, Bombay provided the technical know-how and consultancy to the Malaysian project. The order from Malaysia for the supply of the diffuser was secured against rigid specifications set by the importer.

DRY AND STORAGE BATTERIES FOR EXPORT

India's export trade in batteries and accumulators stood at Rs. 25.57 million during 1971-72. Flash light batteries exports accounted for Rs. 2.7 million; other dry cell primary batteries were exported to the tune of Rs. 8.6 million, wet cell primary batteries Rs. 2.06 million and other primary batteries and parts nearly Rs. 1.0 million. Accumulators and parts earned about Rs. 10 million.

Sudan was the major importer of flash light batteries at Rs. 2 million. The same country was also the major buyer of other dry cell primary batteries, followed by Nepal, German Democratic Republic, U.S.S.R., Iran and Sri Lanka were the best markets for wet cell primary batteries. The Soviet Union imported

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over Rs. 8 million worth of accumulators. U.K., Yugoslavia, Nepal, Qatar, German Democratic Republic, Burma, Kuwait and Iraq were among the other markets for accumulators and parts.

The dry battery industry in India has a licensed capacity of 905 million numbers and the installed capacity by 1971 was nearly 540 million numbers. The production of dry battery cells has been increasing rapidly–from 300 million numbers in 1965 to 570 million numbers in 1971.

Various types of storage batteries are being manufactured in the country in sizeable quantities; they range from motorcycle batteries and automotive batteries to heavy duty batteries. Manufacture of batteries for submarines is also stated to have started. While the installed capacity in this line of production was of the order of 1.26 million numbers, its production has steadily increased from 0.75 million numbers in 1965 to 1.15 million numbers in 1971 (Rs. 188.6 million). While the quantum produced during this period may not have shown a significant increase, in terms of value and range, the progress has been substantial as larger sized batteries have now come to be manufactured.

M/s. Chloride India, 59-C, Chowringhee Road, Calcutta-20, increased their export sales by 15 per cent during the year ended August 1972 at Rs. 9.5 million, despite severe competition in the international battery market. The company has plans for expansion and diversification to introduce new generation batteries using multi-coloured polypropylene containers. They are also setting up an advanced research and development centre to carry out an intensive programme for indigenous substitution of imported raw materials, plant and equipment.

EXPORT ORDERS FOR MILITARY SOFTWARE

The State Trading Corporation of India have recently received export orders for a variety of military softwares. The Corporation hopes to earn foreign exchange amounting to Rs. 5 million during 1972-73 from the export of these items.

The specific products for which the orders were received were jersy, pullovers, tents, socks, gloves, webbings, jerry-canes, berets, smocks, dennison and chaugals.

The orders were placed by Jordan, Kuwait, Lebanon, Oman, Saudi Arabia, Australia, Burma, Malaysia, U.K. and Nigeria.

EXPORT TRADE IN HEAVY ELECTRICALS

Heavy electrical equipment is an area in which the Indian industry has registered sizeable progress. Though of a comparatively recent origin, the industry is today able to meet the entire indigenous requirement of hydro and thermal generators and turbines as also export a wide range of heavy electrical products such as electric motors, transformers, swtichgears, cables, wires, ACC/ACSR conductors, winding wires as also boilers and components.

India's total export effort in electrical apparatus and appliances was of the order of Rs. 187 million as against only Rs. 160 million in 1970-71. Of this, the share of equipment for distribution of electricity was Rs. 54 million and that of electrical power machinery and switchgears Rs. 47.5 million.

M/s. Bharat Heavy Electricals Ltd., 5, Parliament Street, New Delhi-1, have to their credit, large export orders for a broad range of heavy electrical equipment. In the first three quarters of 1972-73, their export earning was as much as Rs. 5 million. Their total exports in the financial year 1971-72 were at Rs. 7.92 million.

The items exported by the High Pressure Boiler Plant of M/s. Bharat Heavy Electricals Ltd., Tiruchirapalli included fans, air heaters and other boiler components. The plant's production value in the first three quarters of 1972-73 was estimated at over Rs. 20 million.

MANGO JUICE TO U.S.S.R.

Preserved fruits and fruit preparations manufactured in India have come to enjoy wide popularity in the world markets. In 1971-72, exports of these items fetched

Rs. 18.35 million as against Rs. 17.26 million in the preceding year. Among the various items exported under this category, mango juice was the main item which earned foreign exchange worth Rs. 12.52 million (5.91 million kgs). Other fruit juices netted Rs. 1.07 million while mango slices brought in Rs. 1.36 million and mango jams Rs. 1.06 million. Other fruit preparations including marmalades, jams and fruits preserved in syrups were also active in export trade.

Among the prominent importing countries for these items, U.S.S.R. was the leading buyer of mango juice with a total intake of Rs. 8.16 million (4.5 million kgs), accounting for more than 65 per cent of the total export value of the juice. Import value of other countries was: Saudi Arabia Rs. 1.2 million (0.47 million kgs); South Yemen People's Republic Rs. 1.08 million (0.35 million kgs); U.S.A. Rs. 0.22 million and U.K. Rs. 0.16 million. Bahrein Islands, Dubai, Kuwait, Singapore and Somalia were the other destinations.

The next important category was mango slice which was mainly absorbed by the U.K., U.S.A. and Federal Republic of Germany while mango jams were imported by Kuwait, Federal Republic of Germany, U. K. and U.S S.R.

During 1971-72, M/s. Uttar Pradesh Agro Industries Corporation, Lucknow exported mango juice to the tune of Rs. 400,000 to the Sovitet Union. Another firm M/s. North Arcot Cooperative Fruit Processing Factory, Vellore in Tamil Nadu repeatedly exported the juice to the same destination to the tune of Rs. 750,000 in the year. The Tamil Nadu firm has had the experience of exporting the item to that country earlier also.

EXPORT PERFORMANCE AND POTENTIAL

INDIA POISED TO EXPORT SENSITIVE CABLES

Since its inception about a decade ago, the Ordnance Cable Factory, Chandigarh - the only of its kind in India – has saved about Rs. 70 million in foreign exchange. It is now poised for exporting sensitive cables.

The factory has already received enquiries from certain developed and developing countries. They are confident of being able to undertake exports in the line on a consistent basis.

The factory played an important role in meeting the defence needs, especially during the last aggression of Pakistan on India. Besides meeting the defence needs fully, they produced high quality cables for the Posts and Telegraphs and the Railways in India. Not only their production has been stepped up by 150 per cent but their products are stated to be comparable with the exacting demand pattern abroad.

The factory has set up a Research Cell to check the goods - even a small piece of a cable of an inch's length - before they are supplied. Apart from performing its testing duty, the Research Cell is also responsible for quality improvements. Some of the factory's latest innovations include lightweight carrier cable, television leading-in-cable and spring steel wires. They are now engaged in the development of wire ropes.

In recognition of their overall performance, the Ordnance Factory was awarded the coveted Ordnance Factory Trophy 'Silpi Sansad', recently.

EXPORT SURPLUS FOR WIRE ROPES

The wire rope industry in India is not only self-sufficient but can leave sizeable surpluses for overseas supply. With nine manufacturing units engaged in the production of these ropes, the industry has an installed capacity of 36,240 tonnes every year. Its production during 1971 was estimated at 19,980 tonnes valued at Rs. 80 million. The domestic production includes locked coil wire ropes also. Indigenous wire ropes are now being used in mines upto the depth of 350 metres. About 65 per cent of the requirements of raw materials or wire rope production is being met from indigenous sources.

The export earning of wire ropes during 1971-72 totalled Rs. 18.6 million. Of this, the black wire ropes made of iron or steel fetched Rs. 10.72 million and galvanised wire ropes made of iron or steel Rs. 7.87 million. Bulgaria was the leading importer of black wire ropes at a value of Rs. 3.5 million. U.S.S.R. and Yugoslavia were the next best purchasers at Rs. 1.42 million and Rs. 1.2 million respectively. Yet another important market was that of Malaysia at a value of Rs. 1.03 million. The black ropes were imported, among others, by Singapore, Thailand, Hong Kong, Canada, Ecuador, Iraq, Kenya, Philippines and U.S.A.

Yugoslavia and U.S.S.R. were the major buyers of the galvanised wire ropes. Their imports in 1971-72 were at the level of Rs. 3.9 million and Rs. 1.2 million respectively. Hong Kong, German Federal Republic, Korea Democratic Republic, Nigeria, Malaysia, Singapore, Thailand, Bulgaria, Burma and Bahrein Islands were the other significant importers.

The quantum exported overseas during 1971-72 was 4785 tonnes in respect of black wire ropes, and 2605 tonnes of galvanised wire ropes.

WEIGHING MACHINERY IN EXPORT TRADE

The weighing machinery industry in India is well established. With four manufacturing units engaged in the line, the industry has a licensed capacity of Rs. 70 million per annum and actually produced Rs. 26.4 million worth of the machinery in 1971. The industry can manufacture a wide range of machines ranging from domestic balances to heavy duty railway weigh bridges. They include a variety of spring balances, crane weighers upto a capacity of 5 tonnes, semi and self-indicating counter-scales, personal weighers, steel yard and platform type weighing machines, grain weighers, pre-determined weighers, dormant weighers, milk weighing machines, airport baggage weighers, and weigh bridges of both road and railway type.

Recently, a few new ranges of semi and self-indicating counter scales, portable platform weighers and railway wagon tippler weigh bridges, have been manufactured for the first time in the country. The industry is poised for the manufacture of more sophisticated types of weighing machines such as those for wagons in motion, weigh feeders, belt weighers as well as machines based on load cell principle.

Besides meeting the growing domestic demand, the weighing machinery industry in the country has come to make a mark in the export trade also. In 1971-72, the industry exported beam scales mainly to South Yemen People's Republic, Sri Lanka, Muscat, Bahrein Islands and Qatar; platform scales to Afghanistan and other weighing machinery to Kuwait, Jordan, Ethiopia and Nepal. Jordan and Afghanistan were the major importers of weighing machinery parts. The total export value in the year was of the order of nearly Rs. 0.6 million.

EXPORT PERFORMANCE OF WELDING ELECTRODES

India had an export market worth about Rs. 3.2 million for welding electrodes during 1971-72. The export quantum was of the order of 1716 tonnes. In the year, Sudan was the best market for the electrodes.. Her purchases were valued at Rs. 0.64 million. Kenya imported worth Rs. 0.42 million, while Syrian purchases amounted to Rs. 0.3 million. U.K., Dubai, Burma, Indonesia, Nigeria, South Yemen People's Republic, Uganda and Yemen Arab Republic were the other prominent importers.

Welding technology in India is undergoing fast changes. More and more rivetted structures are being changed to that of welded structures; the electrodes are required by almost every project, not only in installation stage but even thereafter for reclamation and repair work. India currently produces all types of electrodes running into hundreds of varieties for different applications like welding of mild steel, high tensile steel and stainless steel as also for hard fencing work. The industrial units in the country have developed adequate technical competence and thus do not require foreign collaboration for ordinary mild electrodes. In fact, some of the units are even in a position to provide technical assistance to other developing countries.

The present installed capacity for the manufacture of welding electrodes is nearly 500 million running metres and there are twenty units manufacturing the product. The production estimated in 1971 was in the neighbourhood of 325 million running metres. Production of special electrodes was particularly stepped up in 1971 as compared to the preceding years. The manufacturing units are also bringing into their production range special electrode requirements of hard fencing and welding difficult metals.

GLASS INDUSTRY AND FOREIGN EXCHANGE EARNING

India's export trade in glass and glassware totalled Rs. 14.5 million during 1971-72. The export trade in glass was over Rs. 6 million and that of glassware Rs. 8.4 million.

Among the glass varieties exported, window glass and other worked glass, drawn or blown in rectangular shapes, fetched Rs. 3.6 million. Iraq, Indonesia, Kenya, Malaysia, Iran, Mauritius, U.S.A., Thailand and Sudan were the major importers for these varieties. Safety glass (toughened or laminated) was another important variety supplied abroad at Rs. 1.25 million, Iraq, Malaysia, Singapore and Kenya being the principal markets. Wire glass sheets, glass mirrors cut to size, framed or backed, glass clocks and watches, glass envelopes were among the other glass products active in export trade.

In the category of glassware, glass tableware and other articles for household purposes or for hotels and restaurants earned as much as Rs. 1.95 million. Glass bottles, stoppers, containers and closures secured Rs. 3.5 million. Of this, glass inners for vacuum flasks netted Rs. 1.14 million, U.S.S.R., Australia and Poland being the principal buyers. A wide variety of other glassware were also prominent on export stream, and they included laboratory glassware, glass tubes for colour comparison, glass bangles, glass beads, fancy and decorative glass small wares.

The glass industry in India has made rapid strides in recent years. The industry, which does not largely depend upon foreign technical know-how anymore, is well on its way towards self-reliance. Recently, the industry added to its product range, new products including fibre glass. The industry today produces a variety of products comprising bottles and vials, table and process ware, sheet glass including figured and wired glass, scientific and laboratory glassware, safety sheet glass mirrors, lamp-ware, thermoflasks and bangles.

Presently there are 48 manufacturing units with an annual installed capacity of 429,000 tonnes. An additional capacity of 4000 tonnes was set up during 1971 for the manufacture of shells and fluorescent tubes. In the same year, production of glass and glassware in India was estimated at 290,000 tonnes valued at Rs. 370 million compared to 260,000 tonnes at a value of over Rs. 344 million during 1970. The domestic glass industry has also been able to meet the increased bottle requirements of a variety of schemes, like milk schemes, breweries and for soft drinks. Additional capacity was approved during 1971 to be able to meet the increased requirements of bottles. These schemes are at various stages of implementation. By the end of 1971, total licensed capacity in glass and glassware was 449,000 tonnes.

Flat glass sector of the industry has also maintained a steady increase. As there is only one producer of quality sheet glass by Penvernon process, an additional capacity of 10 million square metres (based on this process) was approved by the Government of India for two more entrepreneurs for meeting the increasing demand of safety glass and mirror products. The current annual installed capacity of fibre glass at 600 tonnes is also sought to be increased by about 1000 tonnes. The process for fibre glass manufacture presently adopted is to melt the imported marble of special glass composition in electrically heated bushings. But the plans for capacity expansion seek to do away with the import of marbles and save substantial sums of foreign exchange. The fibre glass industry is also capable of meeting increasing requirements of the fibre glass reinforced plastic industry. The production in other sectors of glassware such as vacuum flasks, fluorescent tubes and shells for GLS lamps has also registered a marked increase in recent years.

INDO-HUNGARIAN TRADE PROTOCOL

A trade protocol with Hungary for 1973 was signed recently. It envisages a total trade turnover of Rs. 585 million. Major items of exports from India to Hungary will be pharmaceutical products, auto ancillaries, sanitary fittings, chemical products, dyestuffs and intermediates, tubes and fittings, castings, textile machinery, machine tools, calculating and office machines, electronic components and various other engineering and durable goods including consumer goods, besides the traditional items such as coffee, tea, tobacco, pepper, animal feeding stuff, castor oil, cashew kernels, iron ore, mica, crushed bones, tanned and semi-tanned hides and skins, finished leather, coir yarn and goods jute manufactures, cotton yarn, semi precious stones, woollen textiles and knitwear, synthetic and rayon textiles, pure silks and cotton textiles.

The principal items of Hungary's exports to India will be rolled steel products, machine tools, printing machinery wheels, tyres, raw materials for electric industry, special electric motors, essential oils, drugs and medicines, dyes intermediates, lamp raw materials, chemicals, textile machinery, caprolactum and synthetic fibres and yarns etc.

Emphasis was also laid on the need for further expansion of trade exchanges and increased diversification of trade as also need for mutually beneficial cooperation in economic and industrial and other fields. It was further agreed that there was considerable scope for industrial cooperation between the two countries and increased exports of machine tools from India to Hungary.

India is one of Hungary's biggest trading partners among the developing countries. In 1971-72, the trade between both the countries recorded 27 per cent increase over the preceding year.

India's exports to Hungary in 1971-72 amounted to Rs. 155.01 million as against Rs. 137.79 million in 1970-71 while its imports from Hungary were of the order of Rs. 86.76 million in 1971-72 as against Rs. 6.16 million in the preceding year. As compared to India's total exports to the East European region during 1971-72 at Rs. 1880 million, Hungary's share was of the order of 8.24 per cent.

TRADE PACT WITH SUDAN

India and Sudan have recently concluded a new trade agreement envisaging an increase of trade turnover over the previous agreement. The trade exchanges under the new pact are to be valued at £ 250 million (Rs. 876 million) - an increase of £ 16 million over the previous agreement period.

Under the new agreement, India is to buy 300,000 numbers of cotton bales for £ 22.5 million in addition to leather. In turn, Sudan is to import machinery and jute from India.

India and Sudan have a trade arrangement under which the trade between the two countries is conducted through a non-convertible Special Account maintained by the State Bank of India, Bombay.

The last trade arrangement was valid for the period July 1, 1971 to December 31, 1972. Under the earlier trade arrangement a ceiling of £ 28.8 million was provided for Sudanese imports from India as against their exports of £ 33 million. These ceilings were meant for the entire period of the trade arrangement. It was realised, however, that even by the end of June 1972, the Sudanese supply already exceeded the overall ceiling for imports from India. This created a situation under which there were still six months of the earlier trade plan to go and no finances were available for further Sudanese imports from India. A temporary halt had, therefore, to be placed for further exports of goods from India to Sudan. On the other hand, Sudanese supplies of cotton fell short of the estimated quantity. The difficulties were, however, sorted out subsequently and a smoother flow of trade between the two countries was resumed.

India's export trade to Sudan during 1971-72 was of the order of Rs. 517.43 million as against Rs. 382.7 million in the preceding year. India's imports from that country in the respective years were Rs. 253.25 million and Rs. 17.77 million.

WAGON DEAL WITH YUGOSLAVIA

India has already started shipment of railway wagons against Yugoslavia's order for 3,600 wagons worth about Rs. 380 million. Of the five Indian wagon manufacturers, who are to execute this order, two firms have shipped the first lot of 21 wagons recently. The second lot of 60 wagons is to be shipped soon.

The causes for the delay in the execution of orders by other three wagon manufacturers have now been straightened up, following fruitful discussions that a high power inter-Ministerial Indian Delegation had in Belgrade recently with the representatives of Yugoslav railways and the Yugoslav Importing Agency, Rudnab.

M/s. Rudnab will now accept complete indemnity for any delay in assembling the knocked down wagons in Yugoslavia and for the supply of components for the manufacture of wagons without any price escalation.

Under the assembly contract signed in Belgrade, the three wagon builders have been given extension of eight and half months for delivery. Shipment of the entire order is now expected to be completed by the middle of 1974.

Under this wagon deal, India will not only wipe out her Rs. 340 million debt to Yugoslavia, but would also earn considerable foreign exchange from January 1, 1973 when payment arrangements between the two countries in free foreign exchange came into force.

JOINT VENTURES IN AUSTRALIA

The Government of India have approved in principle a proposal for Indian assistance in Australia for the manufacture of carbon and graphite products. The Indian firm that is to participate in the venture M/s. Graphite Limited, Calcutta, will collaborate with M/s. Great Lakes Carbon Corporation of U.S.A. and another Australian company. The proposal involves the export of semi-finished products manufactured in India which are to be graphatised and finished subsequently as per the requirements of the Australian market. India's contribution towards the equity of the joint venture will be by way of exporting the semi-finished graphites.

The Indian economy is today in a position to participate in joint ventures and undertake the establishment of projects on a turnkey basis in a wide range of fields of industry including sugar, cement, paper, solvent extraction plants, machine tools, light and medium structural fabrication, diesel engines, sewing machines, electric motors, transformers, switchgears, boilers, rayon fibre, industrial alcohol and chemical equipment. In Australia specifically, some of the fields in which the Indian assistance can be possible include dry batteries, machine tools, small cutting tools, auto ancillaries, electric fans, clothing, readymade garments and hosiery, woollen carpets, hard board, artisan tools, window and cabinet hardware and sewing machines.

Possibilities of setting up joint ventures by India in Western Australia can also be explored in the fields of fruit canning, manufacture of resins and paraffin wax and fashion footwear. The two countries can also collaborate in setting up meat processing factories in third countries with Australian know-how and with a part of the equipment fabricated in India. Similarly bread-making plants can be set up by the two countries in third countries. In regard to woollen textile mill projects in a third country, the know-how and equipment can be shared between India and Australia.

Australia has been collaborating with the Indian industry in the manufacture in India of diamond drilling bits, thin walled bearings, furnaces, cycle tyres and tubes, machine tools, plastic battery separators, taxi meters, slaughter house equipment, conveyors, welding electrodes, chemicals with plastic base, razor blades, food machinery equipment, aluminium winders, crankshaft grinders, printing machinery, and ceramic machinery.

In 1951-52, Indian exports to that country totalled Rs. 73.3 million while her imports were Rs. 97 million. In 1971-72 India's export value was Rs. 156.9 million and her imports Rs. 180.4 million.

India's exports to Australia have mainly comprised jute manufactures, cotton fabrics, tea, cashew kernel, fish and fish preparations, woollen carpets, carpettings and rugs, footwear and pearls, precious and semi-precious stones. Her imports from Australia have been raw wool, wheat, non-ferrous metals and iron and steel.

THREE MORE INDO-MALAYSIAN JOINT VENTURES

The establishment of three more Indo-Malaysian joint ventures in Malaysia has been finalised recently. These will be for production of pistons, water colours, geometrical sets and other requisites. Total investment on the three ventures will be a little over 3.5 million Malaysian Dollars equivalent to about Rs. 10 million.

India, so far, concluded 30 joint ventures with Malaysia including the above. Of these, 8 are already on production stream. These ventures relate to a number of items such as textiles, industrial and cycle chains, steel furniture, glasswares, edible oils, soaps, precision tools, piston components, electric fans and sewing machines, automobile parts, steel foundry, shock absorbers, sugar and sugar mill machinery and biscuits.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

NEW PRODUCTS AND PRODUCT RANGES INTRODUCED

Quite a few new items were manufactured and new ranges for existing items established for the first time in India in recent years. In 1971, a wide range of engineering and chemical products were produced for the first time by certain industrial units.

In the engineering sector, the new items produced by M/s. Electronics Corporation Limited, Hyderabad include single channel analyser, ultrasonic flaw detector, frequency counter, pulse height discriminator, and geiger counter. Another firm, M/s. National Radio & Electronics Ltd., Bombay produced for the first time automatic solid state voltage regulator and stabilizer, solid state variable speed drive, electronic desk calculator, single phase preventor, electronic solid state counter including digital clocks and precision timers.

Among other new items produced were : transformer oil handling pump by M/s. Best & Co. Ltd., Madras; hydraulic pump and valves by M/s. Usha Telehoist Ltd., Calcutta (Faridabad Unit); Argon Gas filled bulb for miners cap lamp by M/s. Miniature Bulb Industries, Dehra Dnn; Timers, Flashers, process control and Traffic control equipment by M/s. Advani Oerlikon Pvt. Ltd., Poona; Voltage dependent resistors by M/s. Semiconductors Ltd., Poona; (the same equipment was also introduced for the first time in the same year by M/s. National Radio & Electronics Ltd., Bombay) ; IRN clips and clamps by M/s. Republic Forge Limited, Hyderabad (A.P.); Magnetic tapes by M/s. Jai Electronics Industries Pvt. Ltd., Nasik; Internal grinder by M/s. Machine Tools Corporation of India, Ajmer; Notching Machine by M/s. Ameteep Machine Tools (P) Ltd., Faridabad; Cardiograph Recording Paper by M/s. Tokshu Menon Paper Mfg. Co. Ltd., Madras; decoiling and slitting line by M/s. Natheri Steel Pvt. Ltd., Bombay; blood transfusion equipment by M/s. Laboratory Vifor (Ind), Bombay; and Oxygen, Nitrogen and Acetylene plants by both M/s. Indian Oxygen Ltd., Calcutta and M/s. Industrial Gases Ltd., Calcutta.

In the Chemical Industries, M/s. Navin Flourine Industries, Bhestan (Via Udhana) produced fifteen new fluorides, namely, Sodium Silico fluoride, chromium fluoride, ammonium bifluoride, fluoroboric acid, potassium cryolite, potassium fluoride, potassium silico fluoride, potassium titanium fluoride, lead fluoride, lithium fluoride, potassium fluoroborate, sodium fluoride, aluminium fluoride, sodium fluoroborate and sodium mono fluorophosphate.

Among other new chemicals produced in 1971 were funjal diastase, vinyl asbestos flooring material, electrolytic manganese dioxide, styrallyl acetate hinolene, sulfamic acid, pillow-pack, nylon staple fibre, nylon tyre cord, zircon nozzle, dense magnesite, protein biscuits, furfural and phenyl acetic acid.

Among the new ranges established for the first time in 1971 were diesel engines of 280 - 840 hp. range by M/s. Garden Reach Workshops Ltd., Calcutta, Crane weighers upto 5 tonnes by M/s. George Salter India Ltd., Calcutta; Dumpers (25 tonnes) by M/s. Hindustan Motors Ltd., Madras; Shovel excavators (3/4 Cu. Yds. capacity approx. 0.6 m^3 by M/s. Tata Engineering & Locomotive Co., Bombay; additional ranges of Electric lamp caps (E-10/13 and E-14/15 × 17) by M/s. Metal Lamp Caps Ltd. Bangalore; Centrifugal packaged chiller (air conditioning and refrigeration) upto 500 tons of capacity by M/s. Kirloskar Pneumatic Co. Ltd., Poona; Oscilloscope upto 50 mc/s and multi - channel analyser by M/s. Electronics Corporation of India Ltd., Hyderabad; Am/Sm Signal generator and R.F. wattmeter by M/s. Eastern Electronics Ltd., Faridabad; Die-casting Machine of 250 tons capacity by M/s. Hindustan Machine Tools, Bangalore; New Model '320' Duplicators by M/s. Gestetner Duplicators (P) Ltd., Calcutta; Semi-self indicating counter by M/s. Avery India Ltd., Calcutta and Forge Steel Flanges, discs and rings (from 1000 mm to 2000 mm) by M/s. Metal Forgings (P) Ltd., New Delhi.

M/s. Rolcon Engineering Co. Ltd., Vallab Vidyanagar (Gujarat) established new ranges for industrial roller chains including special chains like famtex stenter chain, chain No. 587.2.609″ pitch, 1″ pitch special chain with attachments, 1½″ pitch special chains and heavy duty chains for shovels/excavators including H.M. Crawler chain — 5″ pitch, H.M. Crowd chain — 3.906″ pitch and take P & H Chain 4.5″ pitch.

In the Chemical industry, the new ranges established were P-amino acetanilide, O-Chloro-P-nitroaniline 4-nitro 2, Amino Phenol-6, sulphonic acid, 2:5 dimethoxy aniline by M/s. Atul Products Ltd., Bulsar; Monochloro Acetic Acid and Benzyl Chloride by M/s. Indian Organic Chemicals, Bombay; Di-Iodo hydroxy quinoline by M/s. Indian Process Chemical Laboratories, Yeswantapura, Bangalore; Opt. Whitening Agent viz. Amar Soap/white B. Conc. glow white BRN-NAN Special by M/s. Amar Dye-Chem Ltd., Bombay; disperse dyes viz. Navilene Yellow AL, Navilene Pink RF, Naviline Red, Rubine and Vat Dyes viz. Brill, Blue RCL, Brown/G Grey 2 B, Yellow 3 RT by M/s. Indian Dyestuff Industries Ltd., Bombay; Opt. Whitening Agent viz. Photine Sp 2 CBU by M/s. Hickson & Dadajee Ltd., Bombay; NPK Fertilizer 17 : 17 : 17 and 14 : 28 : 14 by M/s. Madras Fertilizers Ltd., Madras and NPK Fertilizer of 14 : 35 : 14 Grade by M/s. Coromandal Fertilizer, Vizag.

M/s. Hindustan Organic Chemicals Ltd., P.O. Rasayani, District Kulaba (Maharashtra) and M/s. Formalin & Fine Chemical, Hyderabad established new ranges for formaldehyde.

SPOTLIGHT ON TIMBER INDUSTRIES

At one stage, plywood required for packaging had to be imported into India and today not only various qualities of plywood like teachest, commercial, marine, decorative, aircraft types are manufactured sufficiently but are even exported. The production of plywood by 30 factories rose to 28 million square metres in 1971 from 18.88 million square metres in 1970. The installed capacity was 26.12 million sq. metres.

Production of hardboard also improved year after year. Compared to 11,215 tonnes in 1967, the output rose to 20,000 tonnes in 1971 valued at Rs. 17 million. Three units engaged in the manufacture of hardboard have an installed capacity of 34,500 tonnes per year. Production of insulation board also improved from 1640 tonnes in 1970 to 2100 tonnes in the subsequent year. The installed capacity in the line is in the neighbourhood of 6000 tonnes per annum. The total installed capacity of eight units engaged in the manufacture of particle board was 45,000 tonnes; their production has gone up from from 7690 tonnes in 1970 to over 9000 tonnes during 1971. The production growth for particle board would have been higher but for the cost of indigenously made urea formaldehyde resin which is an essential constituent of the item.

The export value of plywood including plywood sheets, decorative plywood, plastic laminates, plywood and other varieties was of the order of Rs. 9.91 million in 1971-72. Of this, decorative plywood was mainly imported by Iraq (Rs. 3.58 million) and earned as much as Rs. 4.50 million. Plywood sheets were supplied among others to Nepal, Iraq and Hong Kong. Iraq was again the major importer of plastic laminated plywood and other plywood varieties.

Besides the export value of plywood material, overseas supply of improved or re-constituted wood totalled nearly Rs. 0.2 million, the major importer being U.K. In addition, the export value of other wood manufactures like boxes and cases, picture and mirror frames of wood, household utensils of wood, domestic or decorative articles of wood totalled Rs. 1.52 million in 1971-72.

Wooden furniture is yet another item in active export trade having secured Rs. 0.62 million. While wooden chairs and parts were purchased among others by Abu Dhabi, Dubai and Nepal, bedsteads of wood were mainly imported by Muscat and Dubai and cabinet ware of wood by Nepal and Malaysia.

Wood in the rough or roughly squared shapes was also exported to the tune of Rs. 69.14 million during 1971-72. Of this, exports of rose wood were of the order of Rs. 57 million. Japan and Italy were the major importers at a value of Rs. 29.8 million and Rs. 19 million respectively. Sandal wood exports amounted to Rs. 5.7 million, Sudan, Singapore, and Hong Kong being the major buyers. Red Sanders was yet another important item of export in the line having secured Rs. 1.9 million; Japan which imported worth Rs. 1.8 million was the major buyer. Besides teakwood, walnut wood and particle wood were the other major varieties supplied overseas.

The safety matches industry is one more area of wooden manufacture that has witnessed improvement over the years. India's full requirements for safety matches are met by the domestic industry and the small scale sector contributes a large share of the total production in the field. In the large scale sector, there are six units with an installed capacity of 4287 million gross boxes of 50 sticks each and the production during 1971 was of the order of 4610 million gross boxes valued at Rs. 126 million. The safety matches industry has also entered into the export field. Its export earning in 1971-72 was valued at Rs. 0.6 million. Among the importers were Afghanistan, Sri Lanka, Greece, Kuwait, Maldive Islands and Muscat.

In the cork products industry, there are two units in India producing cork stoppers with a total installed capacity of 198 million gross numbers and production during 1971 was estimated at 216 gross numbers valued at Rs. 1.73 million. Two units are engaged in the production of cork discs with a total installed capacity of 648 million numbers per year and they produced around 936 million gross numbers during 1971. The value of production was estimated at about Rs. 2 million. Cork sheets are another line of manufacture with an installed capacity of 1.3 million square metres. Two units engaged in the line produced 1.4 million sq. metres in 1971 (Rs. 4.92 million). The demand for cork sheets for automobile gasket industry is expected to grow further while P.V.C. might replace cork discs in the beverage industry in the near future.

The production of densified wood during the last few years has also been increasing steadily. From 246 tonnes in 1967, it is expected to have risen to about 500 tonnes in 1971. The demand for electrical grade of densified wood in the country is met fully from indigenous prouduction.

An important area of import substitution is the production of pencil slats. Two units in this line are estimated to have produced about 260,000 gross in 1971. There are also, however, a number of pencil manufacturers who manufacture this item.

The cork manufacturers have entered the export field. While Kenya and Uganda are the major buyers of cork for bottles, agglomerated cork sheets are mainly imported by Iran. In addition, raw cork and waste is also imported by Kenya.

Timbers required for picking sticks for jute and textile industries which were being imported earlier into India are now met from indigenous laminated wood. The units engaged in this line of manufacture can produce shuttles, bobbins, card staves, card lagging and picking sticks required by jute industry in substantial proportions. A noteworthy development in this area refers to the fact that jute shuttles are now being made mostly from laminated wood and in view of the same, import of timbers required for jute shuttles has been restricted to the extent of only 15 per cent of the demand during 1971. The demand for jute mills wooden accessories from jute industries is met in full both in quality and quantity.

MINING PROGRESS FOR EXPORT

The two iron ore mines under the control of M/s. National Mineral Development Corporation Limited (NMDC), at Kiriburu and Bailadila, raised 4.81 million tonnes of iron ore for export during 1971-72. They supplied lump ore of about 10,000 tonnes to the Bokaro steel plant till the end of the financial year. Since inception, the two mines have exported a total of 22.4 million tonnes of iron ore and earned foreign exchange of Rs. 1430 million.

The Corporation have plans to raise a total of over 71 million tonnes of the ore by 1978-79, of which 44 million tonnes will be meant for export.

The Kiriburu mine, in fact, produced 4.91 million tonnes in 1970-71. The lower production in the subsequent year was due to the lower export commitment as also because they closed down the mine temporarily in December 1971 for modifications to meet the sized ore requirements of the Bokaro steel plant. With no export commitment and low offtake by Bokaro, the Kiriburu mine is being operated only at about a third of its capacity and has thus the capability of undertaking fresh export commitments.

The total production of Bailadila during 1971-72 was 3.76 million tonnes against 3.27 million tonnes in the preceding year. With the induction of new equipment and modifications to the dumper platform which should be ready soon, the Bailadila plant can produce to full capacity from March 1973, it is expected.

NMDC has also under its control a diamond mine at Panna which produced 19,722 carats during 1971-72 against 19,030 carats in the year before. The bulk of the production–15,642 carats–came from Majhgawavan. There are plans to expand operations at this mine from 12,000 carats to 43,200 carats.

The major construction projects under the auspices of the Corporation which are underway are Donimalai, Bailadila 5 and the modification and expansion of the Kiriburu mine. Donimalai is designed to raise 4 million tonnes of run-of-mine ore to yield 1.6 million tonnes of calibrated lump ore and 2 million tonnes of fines.

A proposal to develop the Kudremukh mine has received Government's approval. The other partners in this venture are M/s. Marcona Corporation of USA and the MON Group (Mitsui, Okura and Nissho-Iwai) of Japan.

In addition, investigations for a third mine in the Bailadila area (Deposit 4) and a second mine in the Bellary-Hospet area for export and supply to the Vizag and Vijayanagar steel works are at an advanced stage. The investigations at Meghahatuburu, adjacent to Kiriburu, are now being expedited to match the requirements of the expanded Bokaro steel works in the country.

IMPROVED 4 - WHEELER COVERED WAGON

The Indian Railways have developed an improved four-wheeler covered wagon with a capacity to carry 25 per cent more load than the conventional standard covered wagon. The new wagon, called CRT, was designed by the Railway Designs and Standards Organisation, Lucknow, and is now under manufacture by units in the public and private sectors. The first few wagons have been recently put on the rails. The CRT wagon is specially designed to meet the requirements of small-businessmen who cannot make use of the bigger BOX (Bogie Open Special) and BCX (Bogie Covered Special) wagons.

As compared with the conventional CR type wagons, the newly developed covered wagon has several advantages. It has been provided with roller bearings which eliminate the possibility of hot boxes (overheating of the axle joints) which often result in wagons being detached and detained enroute. It is also mores table than the conventional four-wheeler which means that the goods would be less affected during movement over the railway track. Thicker steel panels have been provided on the body to prevent "bleeding" or damage to consignments by miscreants.

The Railways have ordered nearly 14,000 CRT wagons of which about 6,600 are expected to be delivered and commissioned by March 1974.

NUCLEAR FUEL BASE

Nuclear power generation in India will have to be based on thorium as the existing resources of uranium in the country can generate such power only for next twenty years, according to an estimate. There are vast deposits of thorium available in India which can produce nuclear power for 2000 years to come.

The fast breeder reactors will be required to enable utilisation of thorium. As a first step in developing fast reactor technology in India, such a reactor was installed at Trombay (near Bombay) which is being used for working out parameters. This will enable construction of a pulsed fast reactor in Kalpakkam near Madras. It will also provide information to build up such reactors in future.

COPPER AND URANIUM FROM LOW GRADE ORES

The Indian metallurgists are seriously engaged in the task of using special bacteria for extracting copper and the strategic metal uranium from low grade ores. The technique is known as bacterial leaching. It is claimed that the new technique will not cause chemical pollution, which was a serious problem with conventional methods.

More importantly, the new technique can recover metals from low grade sources–ores that contain up to 30 per cent less metal than what is considered necessary for conventional extraction plants which employ expensive grinding and filtering equipment.

In the bacterial leaching technique, the ores are simply heaped without crushing and the mixture of bacteria, nutrients and a reagent-usually sulphuric acid-is allowed to percolate through piled up ore. The special bacteria called 'thiobacilli' converts sulphur, which is present to some extent in all the ores, into sulphuric acid and alters mineral composition of the ore in such a way that they dissolve in the acid and percolate to bottom. The percolation process is repeated many a time during which bacteria multiply themselves bringing down more and more metal into solution.

Using the new technique, the scientists at the Atomic Minerals' Division of the Indian Government have carried out trials at four Uranium Fields in Bihar. They have discovered that the percolation with bacteria and nutrient produces 60 to 94 per cent more uranium than the percolation without bacteria and reduces leaching time from 12 weeks to 8 weeks.

AROMATIC PLANT ON STREAM

The aromatic plant of the Petro-chemical Complex in Gujarat, costing Rs. 350 million is to soon go on production stream at Baroda. The pre-commissioning trials of the plant are now being held.

The aromatic plant is to have an annual capacity of 24,000 tonnes of dmt, 21,000 tonnes of orthoxylene and 2,500 tonnes of mixed xylene. At its full capacity the plant will be able to save foreign exchange to the tune of Rs. 110 million every year.

The effluent treatment plant at Rs. 1.5 million was to be on a trial run for the aromatic project. For the first time in India latest technolgy has been adopted in designing this treatment plant with completely indigenous technical know-how. Before the treatment process was finalised, laboratory studies were made by the Central Public Health Engineering Institute (CPHERI), Nagpur, and the M.S. University of Baroda to evolve most efficient and economical results.

BHILAI STEEL PLANT CAPACITY TO BE RAISED

The production capacity of the Bhilai Steel Plant under the control of M/s. Hindustan Steel Limited is to be expanded to 7 million tonnes after the present target of 4 milllion tonnes for 1976 will be achieved.

The plant's target for sale during 1972-73 has been placed at Rs. 1620 million. The plant has already succeeded in its sales to the extent of Rs. 1507 million. The total sales of the plant are, in fact, expected to touch Rs. 2000 million mark by the end of 1972-73.

The plant's production during 1972 was of the order of 253,000 tonnes in ingot steel and over one million seven hundred forty four thousand tonnes of saleable steel. In 1971 the plant's production was the highest for any year. Significantly the merchant mill of the plant exceeded its annual rated capacity of 500 tonnes by 20.65 tonnes while its cast iron production was 110.4 per cent more.

INDIA ASSISTS NEPAL IN TELECOMMUNICATIONS

Nepal's domestic and foreign telecommunication outfit, built by India at a cost of Rs. 12.7 million has been recently inaugurated. While inaugurating the outfit, Nepal's Prime Minister acknowledged India's aid programmes in his country. The giant Gandak-Kosi river projects are living monuments of Indo-Nepalese cooperation. India-aided telecommunication network is yet another link in the chain of economic cooperation between the two countries.

POLICY ON FOREIGN COLLABORATION CLARIFIED

Apprehensions expressed in certain foreign circles regarding the proposed changes in India's Companies' Act and Foreign Exchange Regulation Act are baseless. The new Foreign Exchange Regulation Bill is primarily intended to stop leakage in foreign exchange. It further contemplates that the performance of existing companies that have foreign holdings of 40 per cent and above be reviewed and reasons for large outgo of foreign exchange identified. The Bill is indeed not intended to bring down foreigner's share of holdings by disinvestment or to wind up their manufacturing organisations. In certain areas, the expertise of such firms would be utilised in promoting India's export earnings.

The general policy of the Government of India in regard to foreign collaboration and investment in the country is to welcome the transfer of technology on payment of royalties and technical fees. India's foreign investment pattern has become selective with emphasis on the development of indigenous technology. Foreign investment is therefore generally used as a vehicle for transfer of technology or where continued involvement of foreign collaborator is considered necessary for the economic success of specific projects, according to India's Finance Minister who clarified the Government's policy in this regard in the course of his discussions with the visiting Chairman of German Reconstruction Corporation recently.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PERFUME MATERIAL FROM EUCALYPTUS

Citronellol, a high grade perfumery material used in soaps and cosmetics industries has been recently developed by the Regional Research Laboratory, Jammu. Presently, it is produced from imported citronellol oils.

In the process, Eucalyptus Citriodora Oil is used as main raw material. The process consists drying the oil and further resorting to fractional distillation to get citronellol hydrocarbons and residue.

Raw materials required in the process are Eucalyptus Citroidora oil, Isopropyl Alcohol, Aluminium 130 propoxide or aluminium metal, Mercuric chloride and Carbon tetra chloride, Commercial grade sulphuric acid and Anhydrous sodium sulphate. All these are available indigenously. The equipment is simple and can be easily fabricated.

Produced on large bench scales, the product has the specifications prescribed by the Indian Standards Institution (ISI) viz. Refractive index 1.4568 at 20°C, Density 0.8602 at 17°C, purity above 95 per cent.

TANNING EXTRACT FROM TAMARIND SEED

A process for the manufacture of vegetable tanning extract has been developed recently by the Central Leather Research Laboratory (CLRL), Madras. The process involves the use of tamarind seed husk in blending with myrobalan and babul.

The newly developed tanning extract using tamarind seed husk can be used as partial substitute for wattle extract in tanning process. Besides, it has applications as water softening agent for boiler feed water and the by-products can be used as fuel, manure and in hard board manufacture.

It is expected that about 2 to 3 thousand tonnes of this extract can be manufactured annually which can replace 10 to 15 per cent of the imported wattle extract.

The extract is prepared by a simple leaching process using raw materials—Tamarind seed husk, myrobalans, babul bark etc. Samples produced in a pilot plant have been found to be suitable for sole and heavy leather. The epuipment required for the manufacture of three tonnes extract per day are : Boiler (1 tonne/hr), Evaporator (one tonne/hr. water evaporation) and spray drier (200 kg./hr. water evaporation). All these are available indigenously. The specification of products are : tans (58 per cent) and N. Tans (30 to 35 per cent).

MENTHOL FROM MINT OIL

A process for the production of menthol mainly used by pharmaceuticals and condiment industry, has been recently developed by the Regional Research Laboratory (RRL), Jammu.

In the process, Crude mint oil after refining by vacuum filtration is dementholised by repeated chilling and centrifuging. The Menthol crystals are collected. The dementholised oil is then subjected to saponification by NaOH and esterification by boric acid. Menthol separated as menthol borate is then hydrolysed and centrifuged to get liquid menthol which is then repeatedly chilled and centrifuged to get menthol crystals. Liquid menthol is obtained as a by—product.

Confirmed by Pilot Plant tests, the process has already been industrially worked in a factory in Jammu and can be demonstrated for potential entrepreneurs. The product conforms to the specifications prescribed by the Indian Standards Institution (ISI).

The raw materials required for the production of Menthol are Mint oil and oil of mentha arvensis. All these are available indigenously. The machinery required in the process are mainly distillation and reaction units, certrifuges and storage tanks. All these can be fabricated indigenously.

About 20 tonnes of menthol valued at Rs. 6 million is presently consumed in the country. The consumption is likely to be doubled in a few years.

ALKALI CHEMICALS INDUSTRY

A REVIEW

All the basic alkali chemicals are treated in India as priority industries. Some of these, such as soda ash caustic soda, calcium carbide and liquid chlorine are even considered as key sectors for quick development. These basic chemicals are being utilised for a variety of end-uses including the manufacture of consumer articles like soap, textiles, pulp and paper, rayon, aluminium and other non-ferrous metals, petroleum refining, drugs and pharmaceuticals, processing of food, sanitation and hygiene.

The actual production of soda ash improved by about 8 per cent from 44,6,445 tonnes (Rs. 223.20 million) in 1970 to 478,940 tonnes (Rs. 239.70 million) in 1971. Of this, the output of dense soda ash, which is used in industries like glass, bicromates and sodium silicate, was 100,000 tonnes in 1971 as compared to 82,600 tonnes in 1970. In India, there are four soda ash plants presently and all of them have improved their output during 1971. In addition to the four existing units with an installed capacity of 470,800 tonnes per year, three substantial expansion schemes with a capacity of 293,400 tonnes and four new schemes with a capacity of 324,000 tonnes of soda ash have been approved by the Indian Government recently. It is expected that the total additional capacity to be generated by the middle of 1975 will be of the order of 243,000 tonnes of soda ash per year.

The installed capacity of caustic soda spread among 28 units was of the order of 372,125 tonnes per year (1971). Their production in the same year stood at 376,635 tonnes compared to 361,460 tonnes in 1970. In 1971, the Lye variety of caustic soda produced was as much as 266,600 tonnes while that of Fused solid variety 83,600 tonnes and Flake variety 24,600 tonnes. To augment the caustic soda availability from indigenous sources, certain short term and long term steps were taken by the Government of India and the industry. The short term crash programme envisages increased production by the existing units by installing certain small balancing equipment as also by rationalisation. On a long-term basis, the estimated requirements of avaliability and the corresponding capacity to be generated by the end of 1978-79 were worked out and expansion plans are well underway to meet the rise in demand. The impact of rise in caustic soda production is evident from the fact that a quantity of 374,780 tonnes produced in 1971 valued at Rs. 390 million was able to generate production of aluminium, paper and pulp, viscose rayon and staple fibre, textiles, soaps and chemicals of an approximate value of Rs. 10,000 million and provided employment for about one million persons.

The availability of caustic soda in the world market itself has shrunk considerably due to its restricted production in the United States and in the industrially developed European markets where more chlorine is being utilised instead, for the development of various organic chemical industries. As such, India is in a favourable position to export caustic soda particularly to the Middle Eastern and South East Asian countries, inspite of its cost of production being higher than that of the industrially advanced countries. Thus in 1970-71, for the first time about 6050 tonnes of caustic soda were exported at a value of Rs. 6.10 million. Due to internal shortage, the exports declined in the subsequent year.

Liquid Chlorine is another area of consistent expansion. With an installed capacity of 22,015 tonnes per year (spread over 22 producing units), the production increased to 162,445 tonnes (Rs. 57 million) in 1971 from 137,055 tonnes (Rs. 44.10 million) in 1970.

Three manufacturing units with an installed capacity of 25,800 tonnes per annum produced staple bleaching powder of 16,720 tonnes (Rs. 16.7 million) in 1971 compared to 13,745 tonnes (Rs. 9.6 million) in 1970.

The installed capacity for sodium hydrosulphite increased from 7730 tonnes in 1970 to 9290 tonnes in 1971. The actual production of sodium hydrosulphite and derivatives rose to 5870 tonnes in 1971 from 5115 tonnes in 1971. Inspite of the increase in indigenous

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production, nearly Rs. 13 million worth of these chemicals had to be imported to meet domestic shortage, as a temporary measure. A new plant has been recently completed at Bombay and it is hoped that the production of the plant will be able to meet the rising domestic demand substantially. The production of Sodium sulphoxylate formaldehyde was 125 tonnes in 1971.

Sodium Bicarbonate and ammonium bicarbonate constitute other areas of manufacture among alkali chemicals production in India. In 1971, the production of sodium bicarbonate by three industrial units in the line was 19,715 tonnes. Their installed capacity was 28,080 tonnes per year (1971). Ammonium bicarbonate is produced by two units of the Fertilizer Corporation of India at Sindri and Trombay as well as by one manufacturer of soda ash. Their installed capacity and actual production have somewhat increased in 1971 as compared to those in 1970—8,300 tonnes and 4650 tonnes against 7,300 tonnes and 3000 tonnes respectively.

About 6850 tonnes of caustic potash was produced in 1971 which was a 12 per cent improvement over that of 1970 (5945 tonnes). Its installed capacity was 12,375 tonnes in 1971. The production of potassium carbonate also registered an increase of 21 per cent—from 1920 tonnes to 2340 tonnes while its installed capacity is in the neighbourhood of 1500 tonnes per year. Additional capacity for these chemicals is being planned.

After recording a steady increase year after year upto 1970, the production of calcium carbide has been somewhat static. Its output was 69,515 tonnes in 1971 as compared to 69,723 tonnes in the preceding year. As its production almost reached saturation point in respect of its installed capacity, there are plans to create additional capacity for the same.

Having discussed the position of installed capacities and production of major alkali chemicals produced in India, it would be interesting to note the export trend of these items. Soda Ash exports (1971-72) were of the order of Rs. 2.23 million; of this, dense sodium carbonate was supplied mainly to Nepal and Iraq at a value of Rs. 0.33 million, light sodium carbonate was mainly exported to Bangladesh to fetch a total export value of Rs. 1.68 million and other varieties of soda ash were exported to Sri Lanka and Nepal. Caustic soda exports which started in 1970-71 stood at Rs. 2.86 million. Of this, caustic soda flake was exported to the tune of Rs. 1.02 million, mainly to Saudi Arabia, Zambia, U.K. and Indonesia. Caustic soda solid was supplied to Indonesia and Arab Republic of Egypt to fetch Rs. 1.84 million. Bleaching powder exports in 1971-72 totalled Rs. 0.7 million, with Burma, Kenya and Iraq as principal purchasers. The export value of sodium bicarbonate in the same year was Rs. 0.21 million with Nepal as the leading buyer, while that of ammonium bicarbonate stood at Rs. 0.4 million with Vietnam Republic as the major importer.

The increasing trend in the production of caustic potash has enabled the release of exportable surpluses. About 279 tonnes were exported at a value of Rs. 0.4 million in 1970-71, but the value witnessed a fall to the level of 161 tonnes to fetch Rs. 0.2 million in 1971-72. ☐

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economic and commercial news

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TRANSFORMERS TO SRI LANKA

Among a large number of engineering goods which find ready demand in the overseas markets, India-made transformers figure prominently. During 1971-72, transformers in a variety of specifications earned foreign exchange at a value of Rs. 16.52 million as against Rs. 9.30 million in the preceding year.

In 1971-72, transformers upto 37 PT 5 KV (rating upto 3000 KVA) constituted the main category of export having brought in Rs. 13.47 million, accounting for more than 80 per cent of the total export value. As against this, exports of these transformers were valued at Rs. 7.26 million in the preceding year.

Malaysia was the largest buyer of these transformers which absorbed worth Rs. 4.59 million. In the preceding year too, Malaysia was the topmost buyer of these transformers. Next to Malaysia, Sri Lanka was the second best market having imported worth Rs. 2.18 million. Besides, the intake value of other prominent destinations was : Guyana Rs. 2.02 million, Tanzania Republic Rs. 1.39 million, Thailand Rs. 0.89 million and Dubai Rs. 0.79 million. Singapore, Burma, Sudan, Uganda, and Zambia etc. were among the other destinations.

Another category of transformers exported relates to those upto 37 PT 5 KV (rating upto 5000 KVA) which earned Rs. 1.29 million as against Rs. 0.52 million in 1970-71. Nigeria (Rs. 0.65 million), Uganda (Rs. 0.30 million), Tanzania Republic (Rs. 0.15 million) were the other important buyers. Malaysia, Arab Republic of Egypt, Sudan and Iran were the other destinations.

The export earning of other categories of transformers was : Transformers above 37 PT 5 to 66 KV (rating above 10,000 KVA) Rs. 0.71 million and transformers upto 37 PT 5 KV (rating above 5000 to 10,000 KVA) Rs. 0.58 million. Transformers above 37 PT 5 to 60 KV (rating upto 3000 KVA), above 66 to 132 KV (rating upto 3000 KVA), above 66 to 132 KV (rating above 10,000 KVA) etc. were the other categories active in export trade.

Adding to the export effort of the transformer sector, M/s. Voltamp Transformers Private Limited, Post Box No. 186, Baroda, Gujarat, secured during 1972-73 two export orders valued at Rs. 475,000 for the supply of transformers to Sri Lanka's Electricity Board. The transformers to be supplied are required by that country for electrification of 50 Tea factories under loans from Asian Development Bank.

Covering both the orders, the firm is to supply 50 number of 250 KVA 33 KV Transformers to Sri Lanka. This is the maiden export contract of the firm since its inception. The orders were bagged by the firm during a business tour of the firm's representative recently to Thailand, Singapore, Malaysia and Sri Lanka. The firm is expecting more orders from Sri Lanka and other neighbouring countries.

The range of products manufactured by the firm includes : distribution transformers upto 1600 KVA, 33 KV; power transformers upto 20 MVA, 132 KV; transformer oil filter machines upto 1000 G.P.H; welding transformers, furnace transformers, electronic products for household industry and defence and pressure vessels.

As against the installed production capacity of 9,630 MVA in 1971, the production of power and distribution transformers during that year was recorded at about 9770 MVA at a value of Rs. 483 million. In that year 26 units were engaged in the production of transformers in the organised sector. In 1970, against the installed capacity of 9265 MVA, the production was of the order of 9650 MVA (Rs. 364 million) and the number of units engaged in the production was 24.

INDIAN WOOLLEN HOSIERY POPULAR ABROAD

The woollen hosiery exports from India have been gaining wide popularity from year to year. Their export earning improved from Rs. 5.90 million in 1963-64 to the level of Rs. 138 million in 1971-72.

During the first six months of 1972-73 (April-September), the export earning was up at Rs. 112.35 million as compared to Rs. 71 million during the corresponding period of the previous year, according to an estimate of the Wool & Woollens Export Promotion Council, Bombay. This is significant considering that the 1972 figures pertain only to the main ports of Bombay, Calcutta, Madras and Jamnagar whereas the 1971 figures relate to all ports.

M/s. Alps Knitting Works, Saidan, Ludhiana, succeeded in supplying their woollen knitwear to West European countries at a value of Rs. 1.15 million during April-October, 1972. Besides the orders already executed, the firm has additional orders worth more than about Rs. 200,000. The firm expects to double its exports in the ensuing year. They have been awarded a certificate by the State Trading Corporation (STC) of India confirming of their export performance.

Still another firm, M/s. Nagesh Hosiery Mills, Sant Dass Street, Ludhiana-3, have also made progress in their export earning in this line. The firm has been able to improve exports from Rs. 8.3 million in 1970-71 to about Rs. 9.2 million 1971-72. The firm's exports are directed mainly to East Europe, particularly U.S.S.R. and Czechoslovakia.

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FRESH POLISH ORDER FOR MACHINE TOOLS

Subsequent to the sizeable export orders received from Poland in recent times for machine tools, another order worth Rs. 2 million was secured by M/s. Hindustan Machine Tools, Bangalore. The order was placed on the spot when the Polish Prime Minister visited the HMT factory recently.

India manufactures a wide range of sophisticated machine tools to cater both to domestic and export markets. The product range includes even the latest types of machine tools such as drum type turrets, single spindle and multispindle automatics, high precision multi-tool lathes, broaching machines, drilling machines with quick setting arrangements, higher capacity plastic working machines, diversified types of heat treatment and melting furnaces, in addition to a wide spectrum of conventional tools.

India made machine tools are indeed popular already in several countries abroad, including USA, Canada, Australia, New Zealand as also European countries. During 1971-72, the machine tool industry is estimated to have secured nearly Rs. 30 million worth of foreign exchange. The exports rose to this level from Rs. 7.5 million in 1965-66.

In 1971, there were 74 units in the organised sector engaged in the manufacture of machine tools having an installed capacity worth Rs. 670 million. Actual production during that year was of the order of Rs. 352 million.

RADIATORS AND HEAT EXCHANGERS ON EXPORT FRONT

A wide spectrum of automobile equipment is in rising demand abroad. The estimated export value of automobiles and parts in 1971-72 was nearly Rs. 143 million, according to the Engineering Export Promotion Council, Calcutta. Automobile parts alone accounted for Rs. 63 million. Sri Lanka, Arab Republic of Egypt, Nigeria, Singapore, Sudan, Kenya, Iran, Iraq, Philippines, Poland, Saudi Arabia, Tanzania, Uganda and Yugoslavia were among the leading buyers of the auto parts. In the variety of these parts that are exported, radiators and heat exchangers have come to be introduced recently.

One of the manufacturers in the line, M/s. Universal Radiators Private Limited, Mettupalayam, Coimbatore - 11, are exporting a broad range of radiators and heat exchangers to countries like Yugoslavia, U.K., Australia, Singapore, Malaysia, Sri Lanka, Saudi Arabia and Kuwait. The firm, which was set up in 1957, made a beginning in the export field in 1968. Today, it has succeeded in attaining an export target of 21 per cent of its annual production to various countries. The output of the firm accounts for more than 20 per cent of the radiators manufactured in the country. To meet the growing demand for their products, they are trying to streamline their output not only to meet the exacting international requirements but also for attaining higher export targets.

Among auto ancillaries for which domestic production is established sufficiently are nozzles and nozzle holders, single and multi-cylinder pumps, dynamos, starter motors, electric horns, gaskets, wheels and rims, oil seals, shock absorbers, spark plugs, flywheel ring gears, brake assembly, ignition coils, distributors, steering gears, pistons and piston rings, cylinder lines, engine valves, valve guides, tappets and inserts, carburettors, brake hoses, clutch plates and clutch assembly, brake linings and clutch facings, hydraulic pumps and valves. Radiators, cores and caps, oil air and oil water coolers, as also inner and outer coolers have a combined production capacity of 105,000 numbers per year and actual production (1971) was estimated at 137,000 numbers at a value of Rs. 47 million. Additionally, heavy duty radiators and heat exchangers have an installed capacity of 1800 numbers while actual output at 1963 numbers was valued at nearly Rs. 20 million in 1971.

BASIC CHEMICALS ON EXPORT STREAM

Export earning of basic chemicals, pharmaceuticals and allied products recorded an estimated level of Rs. 350 million during 1971-72. Drugs, pharmaceuticals and fine chemicals including medicinal castor oil earned Rs. 99 million; dyes, intermediates, alcohol, and coal-tar Rs. 47 million; inorganic and organic chemicals including agro-chemicals Rs. 53 million; glycerine, soaps, cosmetics and toiletries including processed talc Rs. 36 million; crude drugs, essential oils Rs. 40 million and aggarbattis Rs. 15 million. The supplies were made among others to Western and Eastern Europe, Japan and U.S.A.

M/s. Warner-Hindustan, Ltd., Warangal Road, Uppal, Hyderabed-39, a manufacturer in the line were able to improve their exports of certain basic chemicals, pharmaceuticals and chewing gum base from Rs. 200,000 in 1970 to Rs. 1 million in 1972. They aim to reach an export target of Rs. 2.5 million during 1973. Presently the export destinations for the firm's products include countries like U.K., Sri Lanka and Bangladesh. They are, however, endeavouring to enter new markets in Middle East, Africa, Europe and the U.S.A.

BRIGHT STEEL BARS IN EXPORT TRADE

India's export trade in bright steel bars was estimated at Rs. 8.5 million during 1971-72. Thailand and Iran together absorbed more than half of these exports. The Thai intake was of the order of Rs. 2.2 million while that of Iran was over Rs. 2.1 million. U.S.A. purchased worth Rs. 0.7 million while Singapore, Kuwait, Philippines, Malaysia, Syria and Sudan figured among the other importers.

To the export trade in this category of steel products, M/s. Bright Bar Manufacturing Industries, Baroda (Gujarat) have made a contribution. Their export value in 1970-71 stood at Rs. 0.5 million. Among the firm's customers have been the Far Eastern markets and the U.S.A. They hope to improve their export performance to the level of Rs. 1 million in the near future.

The plant produces bright steel bars and shaftings of different grades including mild steel, carbon steel, alloy steel and other special steel categories.

With 10 major units engaged in the line the bright steel industry in India has an installed capacity of 64,500 tonnes (1971). Actual production was of the order of 54,160 tonnes. Looked against the quantum produced in 1967-68 at only 33,000 tonnes, the production growth in this industry would indicate a notable increase. This uptrend is significant considering that production of bright steel was started in India only about a decade back. The bright steel bras and shaftings produced by the Indian industry are in different ranges and tolerance powers. The varieties produced include peeled forms for dimensional accuracy and grind bars for high tolerances. Bright steel products are produced in rounds, squares, flats, hexagones and other sections in numerous ranges and sizes to suit the requirements of customers, both at home and abroad. The products are produced in India to the standards and specifications accepted internationally.

NEW COFFEE DEAL WITH USSR

Indian coffee is receiving wide popularity in the overseas markets. During 1971-72, coffee exports from India amounted to Rs. 221 million (35430 tonnes). Among the prominent varieties of coffee exported during the year, Arabica cherry constituted the major variety which netted foreign exchange to the tune of Rs. 83 million. The next best category was Arabica plantation (A Grade) which fetched over Rs. 74 million. Robusta cherry, yet one more important category, earned about Rs. 27 million. Besides these, the export earning of other varieties was : Arabica plantation (B Grade) Rs. 8.42 million; other grades of Arabica plantation Rs. 14.42 million and Robusta Parchment Rs. 4.3 million. In addition to these prominent varieties, coffee extracts, essence and concentrates earned Rs. 9.46 million.

U.S.S.R. occupied the leading position among the importing countries which absorbed Arabica cherry variety valued at Rs. 24.65 million (4478 tonnes), Arabica plantation variety at Rs. 30.22 million (4539 tonnes) and Robusta cherry variety at Rs. 6.61 million (1230 tonnes). The next best destination was USA which imported worth Rs. 20.12 million (3704 tonnes) of Arabica cherry, Rs. 7.69 million worth (1246 tonnes) of Arabica plantation and Rs. 6.14 million (1101 tonnes) of Robusta cherry. Yugoslavia, France, Netherlands Australia, Bulgaria, German Democratic Republic, Federal Republic of Germany, Bulgaria, Kuwait, Canada and Norway were the other destinations.

Recently, India's Coffee Board at Bangalore secured a sizeable contract for the supply of 4000 tonnes of coffee to U. S. S. R. Under a similar agreement, the Coffee Board had supplied 3000 tonnes to the Soviet Union earlier in the current year.

The Board also secured another contract from Poland for the supply of 1000 tonnes of Robusta cherry variety valued at Rs. 5 million. Details of this deal appeared in Vol. II. No. 53 of this Weekly.

India is one of the prominent coffee growing countries of the world. During 1970-71, total production of coffee was of the order of 109,775 tonnes, a record output registered so far. Of the total production, Arabica variety accounted for 58,140 tonnes and Robusta variety 51,635 tonnes. Coffee production during the past few years totalled 71,473 tonnes in 1966-67, 57,330 tonnes in 1967-68, 73,500 tonnes in 1968-69 and 63,600 tonnes in 1969-70.

EXPORT PERFORMANCE AND POTENTIAL

LONG TERM INDO-POLISH TRADE PROTOCOL CONCLUDED

A three year Trade Protocol between India and Poland for the years 1973, 1974 and 1975 has recently been concluded. The Protocol provides for a total trade turnover of Rs. 1038 million between the two countries during 1973. This represents an increase of about 30 per cent over the 1972 Trade Protocol. The estimates of trade turnover during 1974 and 1975 would be reviewed and negotiated later.

The Protocol lays emphasis on exports of non-traditional items from India to Poland including engineering and consumer goods like railway wagons, iron and steel castings, spun pipes, steel pipes and fittings, handtools, pneumatic tools, auto ancillaries, electrical household articles, tinned fruits and juices, readymade garments, woollen knitwear, rayon fabrics, hosiery, knitwear and silk fabrics. Additionally, India is to supply to Poland traditional commodities like tea, coffee, black pepper, de-oiled cakes, iron ore, processed mica, tanned and semi-tanned hides and skins, jute goods, cotton textiles, handloom goods and carpets.

India is to import from Poland increased quantities of urea, rolled steel products, equipment for ships, mining machinery, textile machinery, drugs, chemicals and refractory materials.

The trade turnover between India and Poland during 1971-72 amounted to Rs. 695 million. Of this, the share of India's exports to that country was of the order of about Rs. 200 million while her imports from Poland totalled Rs. 496 million.

Besides Poland, Trade Protocols for the year 1973 have also been signed lately with Bulgaria and Hungary. The Protocol with Bulgaria envisages a trade turnover of Rs. 660 million between India and Bulgaria as against the provision of Rs. 650 million for the last year.

The principal items of export from India to Bulgaria will be various engineering goods such as handtools, telecommunication equipment, mild steel electrodes, steel ropes, iron and steel castings, drilling equipment, chemicals, drugs and pharmaceuticals, paints etc. besides the traditional items like iron ore, jute manufactures, tanned hides and skins, finished leather, de-oiled groundnut cakes, animal feed compound, cotton "Bengal Deshi", cotton textiles, leather goods, coir yarn etc.

The principal items of imports from Bulgaria will be urea, caprolactum, rolled steel products, chemicals and pharmaceutical products, zinc, lead and copper sheets, dye and dye-intermediates etc.

The Indo-Hungarian protocol provides for a total two-way trade of Rs. 585 million between the two countries. Indian exports to Hungary, among other things, will consist of pharmaceutical products, auto-ancillaries, sanitary fittings, chemical products, dye stuffs and intermediates, tubes and fittings. India will also export to Hungary castings, textile machinery, machine tools, calculating and office machines, electronic components and various other engineering and durable goods including consumer goods, besides traditional items. Hungary is to export to India, among other things, rolled steel products, machine tools, printing machinery and raw materials for electrical industry, special electric motors, essential oils, drugs and medicines, dye intermediates, lamp raw materials, chemicals, textile machinery, caprolactum, synthetic fibres and yarns.

EXPORT OF RAILWAY TECHNICAL ASSISTANCE

Technical assistance from Indian railways has recently been sought by Iraq and Guinea. While the Iraqi request is for undertaking a feasibility study for a railway project, Guinea has asked for a railway team from India to assess the requirements of spares for wagons as also the possibility of India's supplying coaches, wagons and locomotives to that country.

At the request of the Iranian Government, a railway metallurgist is expected to visit that country shortly. Earlier, eight railway officers were deputed to Iran to advise the Iranian railways on their civil and mechanical engineering matters as also on issues related to costing.

In 1970, a team of twelve railway engineers was sent to Thailand, under the Colombo Plan to advise that country on problems of safety and increasing train speeds. Two experts from India visited Philippines recently, again under the Colombo Plan, to advise the philippines National Railways on their research and development programmes.

Among the African countries, currently 23 Indian railway officers are already helping the Nigerian Railway Corporation. Seven railway technicians are also at work in the civil and mechanical departments of the Nigerian Corporation.

Ten Officers have also been deputed to Zambia for rendering advice to the Zambian Railways. This is in addition to 162 technicians who have worked in different technical departments of their railways.

Two mechanical engineers have been deputed to Ghana to help their Railways regarding workshop facilities and training of personnel.

EXPORT EARNING FROM VITAMINS

While a broad range of medicinal and pharmaceutical products are finding their way in overseas markets, the share of vitamins and provitamins has also improved in recent years. The foreign exchange earning from the overseas supply of vitamins totalled Rs. 0.6 million during 1971-72. Prominent among the vitamin varieties exported are Vitamin B 12, Vitamin B Complex, Nicotinic acid and folic acid. Vitamin B 12 was imported during the year mainly by U.K. and U.S.A., while Malaysia and Singapore were the leading buyers of Vitamin B Complex. German Federal Republic and U.S.A. were the markets for nicotinic acid and nicotinamide. Folic acid was mainly supplied to Nigeria. U.S.A. Sri Lanka, Hong Kong, Kenya, Burma, Malaysia and Nigeria were among the importers of pro-Vitamins and natural or re-produced vitamins.

The actual production of Vitamin A during 1970 and 1971 was of the order of 37 MMU and 42 MMU, while that of Vitamin B12 groups was 116 kg. and 139 kg, Vitamin C 152 tonnes and 192 tonnes, Vitamin B 2 1450 kg. and 2245 kg, Vitamin D 2 and D 3 90 kg. and 105 kg. and Vitamin B1 5400 kg. and 15,735 kg. Production of nicotinic acid and nicotinamide was 29 tonnes in 1971, which, however, revealed a decline compared to 1970.

LEATHER AND MANUFACTURES IMPROVE EXPORT

India's export of leather and leather manufactures witnessed a sizeable increase of Rs. 230.4 million during the period of first six months of 1972-73 (April-September 1972) over the export during the corresponding period of the preceding year. The export value during the period under review in 1972-73 was Rs. 663.00 million as against Rs. 432.96 million in the previous year (April-September).

Interestingly, the exports of E. I. tanned and chrome tanned witnessed an unprecedented increase during the first six months of 1972-73. The exports reached an all time high level of Rs. 639.8 million, registering an increase of Rs. 232.7 million over the exports effected in the comparable period of 1971-72. Finished leather and leather manufactures, the next important variety too witnessed an upward trend. Recording an increase of Rs. 6.7 million over the preceding year's export performance, this variety netted Rs. 33.2 million. Leather footwear and components was the only category the exports of which marginally declined. In the comparable periods of

1972-73 and 1971-72 the export value of the item was Rs. 39.5 million and Rs. 42.5 million.

Effective from November 14, 1972, exports of all types of footwear have been canalised through the State Trading Corporation (STC). Prior to the date footwear whose uppers were made of wholly or partly of leather were canalised. Besides footwear, exports of all categories of semi-processed hides and skins and crust leather have also been canalised through the STC from 14th December 1972. The export of these items was canalised through STC mainly with a view that export of leather, more in the finished form and leather manufactures, be made rather than exporting semi-processed hides and skins. Effective measures are being taken by the Government to implement this policy.

Production of tanned hides and skins in the organised sector witnessed improvement year after year. It was 45 million numbers in 1951-52, and 69 million numbers in 1965-66. The targetted production by 1974-75 has been placed at 27.6 million numbers for tanned hides and 66.3 million numbers for tanned skins.

During 1971-72, the exports of leather and leather manufactures were of the order of Rs. 907.66 million against Rs. 721.82 million in the previous year. Of this, leather exports alone recorded a sizeable improvement at Rs. 901.42 million from Rs. 715.88 million in 1970-71.

FERRUGINOUS MANGANESE ORE TO SOUTH KOREA

For the first time, India is to supply ferruginous manganese ore to South Korea under a five-year contract concluded recently with that country in Seoul. Under the contract, the Minerals and Metals Trading Corporation of India (MMTC) is to supply iron ore worth Rs. 10 million and ferruginous manganese ore worth Rs. 2.5 million.

Total exports of Manganese ore and concentrates from India amounted to about Rs. 106 million during 1971-72. Of this, Ferruginous manganese ore and concentrates alone accounted for more than Rs. 56 million. Japan with an intake of Rs. 54.75 million was the main buyer. Belgium and Spain were the other buyers. During the same year (1971-72), export earning of iron ore was of the order of Rs. 998.25. Japan with an intake worth about Rs. 816 was the major buyer again. The other important destinations for this ore were Rumania, Czechoslovakia, Poland, Bulgaria, Yugoslavia and Belgium.

COTTON TEXTILES EXPORTS UP

India's cotton textiles exports during 1972 were up at Rs. 1478 million as against Rs. 1083.5 million in 1971, Rs. 1165 million in 1970 and Rs. 1052 million in 1969.

The increase during 1972 was witnessed by all categories. While the exports of cotton yarn were higher at about Rs. 223 million as against Rs. 129 million in 1971, apparels earned Rs. 215 million against Rs. 118 million. The exports of cotton piecegoods also improved to Rs. 823 million from Rs. 666 million. The export value of hosiery was also up at Rs. 6 million compared to Rs. 3.8 million. Similarly, other made-up articles of cotton fetched Rs. 211 million compared to Rs. 177 million in 1971.

An important factor leading to this increase in export earning was the increase in the unit value of cotton piecegoods which forms the bulk of the cotton textile exports. The unit value rose to Rs. 1.89 per sq. metre from Rs. 1.70 in 1971, Rs. 1.60 in 1970 and Rs. 1.50 in 1969.

Regionwise, excepting Africa and Oceania, the gain in 1972 exports was noticeable in all regions. Exports to West Europe rose to about Rs. 50 million from Rs. 23.7 million. U.K.'s purchases were, however, lower at Rs. 132 million against Rs. 159.8 million. East Europe absorbed as much as Rs. 264.3 million worth cotton piecegoods against Rs. 57 million and the U.S. intake totalled Rs. 123 million against Rs. 85.6 million.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PRODUCTION TRENDS IN ALCOHOL INDUSTRY

The value of alcohol production has gone up from Rs. 218 million in 1970 to Rs. 240 million in 1971. The output in 1971 amounted to 210,000 kilolitres while its installed capacity, spread over among 67 manufacturing units, was 322,500 kilolitres. Production of beer was 38,100 kilolitres as against the combined installed capacity of 38,000 kilolitres of 97 manufacturing units. Citric acid is another important category in this area of production with an installed capacity of 1500 tonnes per year though its production in 1971 was far less than the available capacity. In the same year the output of yeast was about 705 tonnes as compared to its installed capacity of 1950 tonnes. There are 27 major manufacuring units of country spirit whose production amounted to 27,370 kilolitres in 1971 at a value of over Rs. 4 million. Bacterial diastase is another sector of alcohol manufacture.

In India, alcohol is used as an important raw material for organic chemicals such as butanol, acetic acid, and acetone. Large quantities of alcohol are also being utilised for the production of synthetic rubber and styrene. Molasses constitute an important raw material for alcohol production. There has been little import of this bye-product of the sugar industry in recent years. Presently, about 182 million litres of alcohol is required by the various organic chemical industries and about 88 million litres for other purposes. There has been no import of alcohol also in recent times.

After the removal of beer from the banned list of production in 1968, quite a few units have been licensed. The total capacity is to be soon raised to the level of over 78,000 kilolitres. For the production of citric acid, presently there is only one single unit, but two more manufacturers - one in Tamil Nadu and the other in Gujarat - have been granted letters of intent for a total capacity of 5,000 tonnes.

Of the installed capacity for yeast, 300 tonnes is of pharmaceutical grade and 1650 tonnes of bakers's yeast. Plans are underway for expanding the manufacture of baker's yeast in Mysore.

Export of alcohols secured over Rs. 8 million during 1971-72. Undenatured ethyl alcohol was the major item exported, having fetched Rs. 7.8 million. Japan was the foremost importer at Rs. 6.6 million and U.K. was the next best market at Rs. 1.23 million. Besides, ethylene, glycol was exported to Netherlands at a value of about Rs. 0.4 million. Menthol and lauryl alcohol are other items of supply to Malawi, Muscat and Japan.

In addition to the export earning of alcohols, alcoholic beverages are also exported. Wines were supplied to Bahrein Islands and Kuwait during 1971-72 and beer was principally imported by Nepal, Bahrein Islands and Sudan. Among the distilled alcohol beverages, brandy and whisky are important. U. K. and France were the major customers of Indian liquors while Fiji Islands imported whisky and Bahrein Islands purchased brandy.

SPOTLIGHT ON INSECTICIDE INDUSTRY

Increased emphasis on agricultural production has had a salutary influence on the growth of the insecticide and pesticide industries of India. Several new pesticidal chemicals and insecticidal formulations have been brought into the fold of this sector of manufacture in recent years.

The production trend of insecticides including pesticidal formulations witnessed consistent growth year after year. The production was of the order of 12,400 tonnes in 1965. The output of insecticides rose to nearly 22,000 tonnes while that of solid pesticidal formulations to 40,000 tonnes and liquid pesticidal formulations to 7600 kilolitres by 1971.

In 1971, increase in production of pesticidal chemicals like DDT, copperoxychloride, malathion, zinc phosphide, thiocarbomates, dithiocarbamates, weedicides, methyl bromide, ethylene dibromide, aluminium phosphide, nickel chloride, parathion, dimethoate, metasystox, fenitrothion has been achieved.

For B. H. C. (technical), the installed capacity in 1971 was of the order of nearly 23,000 tonnes while actual production in the year was over 16,500 tonnes. The installed capacity and actual production in 1971 for other insecticides is : DDT 4200 tonnes and 4180 tonnes; copperoxychloride 2284 tonnes and 806 tonnes; malathion 1475 tonnes and 862 tonnes; organo-mercurials 111 tonnes and 8 tonnes; zinc phosphide 300 tonnes and 192 tonnes; 2,4-D : 1700 tonnes and 21 tonnes; M. Bromide 400 tonnes and 41 tonnes; nickel choride 150 tonnes and 51 tonnes; parathion 1200 tonnes and 584 tonnes; aluminium phosphide 450 tonnes and 170 tonnes; dimethoate 220 tonnes and 110 tonnes; metasystox 250 tonnes and 34 tonnes; fenitrothion 100 tonnes and 60 tonnes; ethylene dibromide 208 tonnes and 40 tonnes; zineb and meneb is 3400 tonnes and 1459 tonnes, while combined installed capacity for thimar and ziram is 1800 tonnes and production 28 tonnes. The installed capacity for pesticidal formulations was 32,550 tonnes. The actual output of solid pesticidal formulation was 40,000 tonnes and that of liquid formulations 7600 kilolitres.

The production of organo-mercurials has witnessed some decline in recent times due to their substitution by organic seed dressings. The substitution helped save foreign exchange required for the import of mercury. The production of pesticidal formulations rose due to increased demand arising from the crash programmes undertaken by the Government of India for improving production in areas like cotton, jute, oilseeds and food crops.

The insecticides industry has contributed its mite in the context of India's export trade too. The export earning of insecticides, fungicides, disinfactants and their preparations fetched Rs. 1.70 million during 1971-72. Hong Kong, Malaysia, South Yemen Peoples' Republic, Sri Lanka, Burma and Nepal were the principal customers. The export share of disinfactants was Rs. 1.3 million. The other items of export possibility in this group are aldrin, aluminium phosphite, fungicides and certain pesticidal formulations. Burma was a significant market for pesticides.

INNOVATIONS AND IMPORT SUBSTITUTION

India is estimated to have 22 qualified scientific and technical personnel in every 10,000 of the population as against 23 per 10,000 in Japan. But the deployment of the technical manpower is only 1.3 per 10,000 on research and development in India as against sixteen in Japan. Out of 1.2 million qualified scientists and engineers available, less than 10 per cent of them are employed on institutionalised research and development centres. This would represent hardly 6 per cent of the total stock; almost the entire lot works in research and development institutions set up by the Government of India. The contribution of the free lancer technicians is, however, substantial in terms of scientific inventions and exploration of new technological processes.

The Inventions Promotion Board set up by the Government of India a couple of decades back, has as its aim the stimulation of the spirit of invention amongst scientific and technical personnel and industrial workers. The Board seeks to harness the inventive talent of such personnel working outside institutionalised research and development centres. This body offers financial assistance for patenting and development of promising innovations and provides entrepreneurial guidance for commercialisation of accomplished inventions. Since its inception, the Board presented awards for nearly 350 inventions. Out of these 75 per cent were bagged by freelancers and almost all the top awards went to them.

The highest award presented by the Board, so far, went to a party that developed a tea-fermention drum and a mirror screen arrangement for projection of films. Among other award winning inventions were Contra-rotating synchronous motor, low-cost gadget for decreasing automobile fuel consumption, bullet-proof helmet for defence and uni-sheer connectors for quadricon prefabricated jointing members.

On a somewhat smaller scale, the Board encouraged certain other inventions like rope-making machine, powered potter's wheel, oscillating fan system, electric shock control device, safety box, coconut, de-husking machine, 'chapati' making machine and the like which in majority of cases originated from technicians, industrial morkers and others with small means and which cover practically every field from sophisticated electronic equipment to medical instruments.

In recognition of pioneering work in the field of import substitution, the Board presented awards for nearly 170 products, most of them bagged by freelance scientific and technical personnel. The items for which top import substitution awards have been given include capital equipment used on River-Valley projects, strategically important chemicals and significant developments in the field of electronics. Some of these items are 40 ton gantry revolving crane and other dam construction equipment, manufacture of T.V. sets, field telephone for defence, microwave components, driver's safety control, 10-headed verticle paper insulating machine for manufacture of cables, xerographic dry process printing machine, manufacture of red phosphorus, continuous casting and rolling plant for manufacture of aluminium redraw rods and electronic education kit.

TEST FACILITIES FOR ELECTRONIC INDUSTRY

The electronic industry in India has grown appreciably during the last few years. While the industry has been constantly endeavouring to diversify its products and increase its output, efforts are also made to acquire a high degree of quality and reliability for all electronic items, not only during design and development but also during bulk production. The idea is to be able to fully exploit the export potentialities of the industry as also to do away with the import of a large number of professional defence grade components. In this context, the recent seminar on export promotion of electronics at the ASIA 72 Fair, held lately in New Delhi, highlighted the establishment of more and more test facilities for electronic items produced in the country.

Presently some of the large units in the line, both in public and private sectors, have set up required test facilities and calibration facilities which are made available at reasonable charges to small-scale units also. Additionally, test facilities for electronic items are also available at the Defence laboratories at Bangalore, Bhabha Atomic Research Centre at Bombay and National Physical Laboratory at New Delhi.

The Defence Laboratory, viz. the Control-lerate of Inspection Electronics (CIL) Hebbal, Bangalore, has been permitted by the Government of India to extend its testing and calibration facilities for non-defence work also on nominal payment basis.

CIL has 48 specialised laboratories fully equipped to carry out the complete electrical, climatic and durability tests on various types of electronic electrical equipments. These laboratories carry out testing and evaluation of of electronic / electrical, electro-medical components and various types of cable. Electronic and electrical equipment such as, radar, radio, telegraph, telephone, charging/generating sets, primary and secondary batteries can be tested and evaluated to the most stringent specifications. The laboratories are manned and controlled by experienced and qualified engineers. CIL is assisted in this task by Inspectorates of Electronics situated at Bombay, Calcutta and New Delhi whose existing limited facilities are also being augmented.

For non-defence testing and calibration work, CIL issues Test Certificate indicating the test results against the specification prescribed by the manufacturer/designer. It also tries to analyse the causes and mechanism of failure and advises about the remedial measures. A manufacturer can send his product during development of production stage for testing without fear of leakage of any information to his competitors. If desired, the manufacturer can also send his representative to be present during testing or calibration. Relevant information/literature regarding the facilities available at the CIL is available on payment.

To keep pace with the rapid growth and sophistication in the electronic industry, intensive efforts are continuously made by CIL to plan and equip these laboratories progressively. In the last few years, rapid expansion has taken place, particularly in electronics and microwave components, environmental and reliability testing laboratories and test equipment / calibration labs. Facilities in these laboratories are being progressively built up and additional facilities for testing of integrated circuits, semi-conductors and photo tubes will also be added shortly.

RECORD PRODUCTION AT BOKARO STEEL PLANT

Bokaro's first blast furnace, having gone on stream only recently, produced 122,530 tonnes of hot metal in the first three months of its operation. This has been possible due to a high degree of automation, competent technological innovations and improved technology incorporated in the design of the furnace. In December 1972 alone, the share of the output was 54,560 tonnes. The highest production attained on a single day was 2,240 tonnes which is the record for any blast furnace so far in the country. The coke rate is on an average, only 730 kg. per tonnes of hot metal produced against 744 kg. envisaged in the detailed project report.

The construction programme for the rest of the steel plant at Bokaro is also being pushed forward steadily. During December 1972, 15,000 tonnes of structures, equipment and refractories were erected, which is the highest so far attained at Bokaro and indeed the highest ever achieved in the construction of any steel plant in the country. Efforts are also being concentrated on erection of steel melting convertors and hot rolling mills. A very large chunk of the work on the first stage has already been executed. Upto December 1972, the entire earthwork excavation and filling of 94 per cent of underground communications was completed. About 72 per cent of the work relating to equipment erection was also completed by that time.

The expansion of Bokaro plant to produce 4 million tonnes in the second stage has already been taken in hand and is expected to be completed by 1975. In Bokaro's expansion, the stress is on indigenisation. Accordingly, as much as 86 per cent of the equipment will be indigenous, besides the entire supplies of structurals and refractories.

Further expansion of Bokaro to 4.75 million tonnes has already been approved by the Government of India.

FOURTH ATOMIC POWER STATION AT NARORA

India's fourth atomic power station at Narora (Uttar Pradesh) is expected to be ready within five years time. The design stage for the project has already begun. In the first stage, the station will consist of 235 m. w. generating unit, costing over Rs. 1,200 million. Provision was made in the design to boost ultimate capacity to 1000 megawatts.

According to the Chairman of Atomic Energy Commission in India, the Narora station will signify a major step towards Indianisation in design and construction. The entire design and engineering effort for the project, located in an earthquake zone, has been undertaken by Indian engineers and scientists.

The other three atomic power stations in India are located in Tarapore (Bombay), Kota (Rajasthan) and Kalpakkam (Madras). Of these, the Tarapore station is already commissioned. The other two are in the construction stage.

NATIONAL HIGHWAYS IN INDIA

India today has 56 national highways totalling 28,820 kilometres. The Indian Government accords high priority to highway development in the country's planned programme. In the Fourth Five Year Plan, a provision of Rs. 3312 million was made for the development of national highways as against Rs. 2340 million actually spent during the last 22 years since 1947.

Of the total allotment for the Fourth Plan, a sum of Rs. 2930 million is intended for new works on the development of the existing highways and for the production of building machinery. In addition, work on new national highways for over 4890 km. is to be taken up.

INDIGENOUS SCOOTER PRODUCTION

The first lot of 600 scooters 'Girinar' manufactured by the State Sector Project of Gujarat will be soon released on road. About 85 per cent of the parts for these scooters have been supplied by small scale industries and the rest of the operations were undertaken by the State Project. Currently, the project has a licensed capacity to produce 2000 scooters per annum. It is expected that within a span of three years, the project will raise the output target to 2400 scooters per year.

India's installed production capacity in 1971 was of the order of 167,000 numbers for motor cycles, scooters, mopeds and scooterettes and three-wheelers. Their production was estimated at 127,200 numbers in the same year. It is expected to go upto a level of 210,000 numbers by 1973-74.

There are three major units engaged in the production of motor cycles, four units for scooters, three units for mopeds and scooterettes and three units for 3-wheelers.

During the period 1961-71, the production of scooters recorded five-fold increase from 12,815 numbers to 67,215 numbers. Output of three wheelers increased from 1270 numbers to 6145 numbers. During the same period, production of mopeds and scooterettes also increased sharply from 2635 numbers to 14115 numbers.

NEW FOREST BASED INDUSTRIES

Three forest based industries are to be soon set up near Bastar (Madhya Pradesh). One of them will be in the joint sector while the other two are to come up in private sector.

The joint sector industry costing about Rs. 400 million will have an annual capacity of 125,000 tonnes of paper and pulp. Of the two private units, a Rs. 220 million rayon grade pulp mill will be set up by an existing rayon firm, while a Bombay firm will set up a corrugated media paper mill costing Rs. 190 million.

In India today, there are 59 units engaged in the paper and paper Board industries with an installed capacity of 882,000 tonnes and their actual production in 1971 was valued at Rs. 1550 million (774,760 tonnes). The production capacity for pulp is of the order of 87,000 tonnes and that for paper grade pulp 22,500 tonnes. The installed capacity for newsprint is 75,000 tonnes (1971). The total value of estimated production of Paper and Paper Board, Newsprint, pulp and paper grade pulp was Rs. 1745 million in that year.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PENTAERYTHRITOL DEVELOPED

A process for the production of pentaerythritolo, an important organic intermediate, used in the manufacture of synthetic resins, pentaerytdritol and explosives has been developed by the Regional Research Laboratory (RRL), Hyderabad using raw materials and equipment available indigenously.

The process consists of reacting solutions of acetaldehyde and sodium hydroxide with solution of formaldehyde in a stainless steel reactor, under controlled and programmed temperature conditions. The reaction products are concentrated in an evaporator and pentaerythritol crystallised out in a crystalliser. Number of crystallisations depend on the purity of the product required. Finally pentaerythritol is dried in a dryer. Sodium formate is obtained as a by-product.

The work was carried out on a laboratory scale and also scaled up to a 6 kg. per batch unit. The yields were 78-82 per cent on the basis of acetaldehyde. The product obtained in a typical run had certain quality : Monopentaerythritol (95 per cent); dipentaerythritol (4.5 per cent) and ash, moisture etc. (0.5 per cent). The product obtained by RRL can be compared well with the imported samples.

The raw materials required in the process are formaldehyde, acetaldehyde, caustic soda and formic acid. All these are available indigenously. The plant and machinery required in the process are : stainless steel (s.s) reaction kettle with condenser, s.s. evaporator with external heat exchanger, s.s. receiving tank and crystalliser, s.s. centrifuge, electric or steam dryer, s.s. iron exchange columns, vacuum assembly, s.s. centrifugal pumps, storage and transportation tanks etc. All these are available indigenously.

Though, at present some firms are producing the chemical in the country, large quantities are still being imported. According to the monthly statistics of the foreign trade of India, the import of pentaerythritol during 1970-71 was 1748,465 tonnes, valued at Rs. 6.98 million. With more supplies, the demand for the material is expected to increase at its annual growth rate of 10-15 per cent (for the last 5 - 8 years). About 85 per cent of the pentaerythritol consumption is by synthetic resins industry. The rest goes into the manufacture of pentaerythritol tetranitrate.

PHENOXY ACETIC ACID

A process for the manufacture of phenoxy acetic acid used in the manufacture of penicillin V has recently been developed by the National Chemical Laboratory (NCL), Poona.

Phenoxy acetic acid (PAA) at present, is being manufactured by a firm in Ahmedabad. However, the present production is not sufficient enough to meet the domestic demand and the country has to rely on imports. The demand of PAA has been estimated at about 20 tonnes per annum, based on the requirements of penicillin V.

The process developed by NCL consists of reacting phenol and mono-chloro acetic acid with sodium hydroxide when respective sodium salts are obtained. Interaction of the sodium salts and acidification of the mixture yields phenoxy acetic acid. The investigations at NCL have been carried out on pilot plant of 50 kg. batch scale. The product manufactured by NCL has been found to be satisfactory for the manufacture of penicillin V.

The main raw materials required for the manufacture of this compound are phenol, monochloro acetic acid, sulphuric acid and caustic soda. All these are indigenously available. The major items of plant and equipment required in the process are glass lined reaction vessels (jacketted), S.S. storage vessel, S.S. crystallisation/washing vessels (jacketted), centrifuge, tray drier, acid pump etc. All these are either indigenously available or can be fabricted in the country.

PRODUCTION FOR WAXLESS CARBON PAPER

Carbon paper is usually produced by applying the coating composition consisting mainly of waxes and carbon black on the surface of the carbonising tissues. The commonly used waxes are carnauba wax, micro-crystalline wax and bees wax. These waxes are not reported to be produced in the country. At present, the import of the raw materials for the manufacture of carbon paper excluding carbonising tissue is involving substantial amount in foreign exchange. It is estimated to be in the range of Rs. 2 to Rs. 2.50 million per year.

The present estimated demand of carbon paper is about 6 million boxes each containing 100 foolscape size sheets and this demand is likely to go upto about 8.50 million boxes by the end of Fourth Plan period. Meanwhile six units are manufacturing carbon paper in the country.

Waxless carbon paper, contact copy paper etc. have recently been developed in advanced countries. The sub-committee of the Packaging and Paper Conversion Committee and the Development Council for Paper have recommended the manufacture waxless carbon paper in the country during the Fourth Plan period. Thus, there seems to be good prospects for the marketability of this type of product.

With a view to producing carbon with peper indigenous know-how, investigations were undertaken at Regional Research Laboratory (RRL) Jorhat, and a solvent based coating composition has been developed successfully. The composition consists of a binding agent, a plasticizer, a dye, a colour carrier, a filler and suitable solvent. By applying the solution on the carbonising tissue, carbon paper can be produced. The work has been conducted on laboratory scale. The main advantage of the process is that it eliminates the use of special type of waxes. The solution can be easily prepared and dries up very quickly. The development of this process will result in a considerable saving in foreign exchange. The sample prepared by RRL was sent to M/s. Bharat Carbon and Ribbon Company Limited, Bombay for evaluation.

The essential raw materials and equipment required for the production of waxless carbon paper are dye, kaolin, toluene or xylene, mineral oil, oleic acid, ethyl cellulose etc. Ethyl cellulose may have to be imported for the time being while other materials are indigenously available. The majar items of plant and equipment required are steam jacketed mixing tank with stirring arrangement, vessel used for making dye solution, roller mixer, coating machines including drying and winding arrangements, storage vessel and cutting unit. Except coating machine, all other items of equipment can be fabricated indigenouly.

PROCESS FOR FATTY ALCOHOLS

A continuous process for the hydrogenolysis of oils to corresponding alcohols at a comparatively lower working pressure than the conventional methods has recently been developed by the Regional Research Laboratory (RRL), Hyderabad.

At present, fatty alcohols are not known to be produced indigenously and the entire demand is now met by imports. It is estimated that about 1000 tonnes of fatty alcohols are needed in the country annually. The value of fatty alcohols in commerce today is apparent from certain applications, viz. synthetic detergents, cosmetic uses, anti-foaming agents, plasticizers, oily and waxy formulations and evaporation retardants.

The process consists in passing a co-current stream of hydrogen coconut oil mixture through a fixed catalyst bed maintained at reaction temperature. The product alcohols are separated from the gas stream in a separator from which the gas is recycled back into the system. The separated alcohols after drying are distilled under vacuum into lower and higher boiling fractions. Some of the distinct advantages of the developed process are : the operating pressures are comparatively lower than in the conventional methods; the process can easily be extended to other raw materials viz oil other than coconut, fatty esters and even to fatty acids with some modifications in the reaction conditions and small quantities of catalyst are needed as it is active for many hours of operation.

The process has been studied on pilot plant scale of 17 litres per day. The pilot plant was operated for about a year. The yields were 80-85 per cent based on oil weight.

The main by-product obtained from oil hydrogenolysis is iso-propanol. It appears practicable to recover about 75 kg. iso-propanol per tonne of fatty alcohols.

The main raw materials required in the process are coconut oil, catalyst and hydrogen. All are available indigenously.

Various items of plant and machinery required in the process are : Fatty oil storage farm; oil metering pump; low pressure hydrogen storage; Gas compressors; high pressure hydrogen storage; heat exchanger; reactors; preheater; cooler; high pressure gas liquid separator; trap; gas drier; gas recirculating pump; fatty alcohol intermediate storage-cum-settler; drier (vacuum); batch distillation still with packed column; reflux condenser; ejector (steam) installations; boiler for steam generation and cooling tower.

ANTI-CORROSIVE PAINT FOR SHIPS

A process for making anticorrosive paints for ship's bottom using indigenous raw materials has been developed by the Regional Research Laboratory (RRL), Hyderabad.

The paint for ship's bottom is being produced indigenously using phenolic resins based on imported phenols. Consumption figures for anticorrosive paint for ship's bottom in India are nota vailable. Nevertheless, data collected by the RRL from three major shipping companies shows that the annual consumption of this paint is about 100,000 litres. However, with the continuing growth of ship building industry, the demand for these paints is bound to increase manifold.

The process consists in preparing the medium first and then the paint. To a hot mixture of cashewnut shell liquid (CNSL) and hexamine, white spirit and dehydrated castoroil (DCO) are added and the mass heated. Styrene is then added to the mass which is further heated. The medium after cooling is storedin a tank. Suitable quantities of medium, pigments and spirit are ground in a ball mill. To the ground mass, further quantity of medium and white spirit are added and thoroughly mixed in a mixer. Aluminium pigmet is then mixed with the mass. After addition of driers, the paint is filtered and packed in drums

After carrying out the process on a laboratory scale, the paint was prepared on a pilot plant having a capacity of 100 litres of paint per day of 8 hours.

The product conforms to AC-655 standard specifictions recommended by British Admirality and also to IS : 1404-1963. The paints are successful in raft trials carried by the Naval Chemical and Metallurgical Laboratory, Bombay. They are also used as anticorrosive paint for structural steel in salty atmosphere Service trials are also conducted on actual ship's bottom by the Shipping Corporation of India. The performance of this paint is reported to be similar to that of the commercially available conventional primer.

The main raw materials required in the process are, cashewnut shell liquid, dehydrated castor oil, hexamine, styrene, white spirit, pigments and driers. All these are available indigenously.

The main items of equipment required are stainless steel reaction vessel with stirrer and reflux condenser, ball mill, vertical mixer storage tanks, handling equipment and laboratory equipment. All these items of equipment are indigenously available.

ANTIOXIDANT FOR RUBBER INDUSTRY DEVELOPED

The 2, 2, 4-Trimethyl-6-exthoxy-1, 2-dihydro-quinoline, used as an antioxidant in rubber industry has been developed by the National Chemical Laboratory (NCL), Poona, recently.

At present, the product is being manufactured by one firm in the country whose production is reported to be of the order of 50-100 tonnes/year. It is estimated that the demand in the near future may be around 500 tonnes per annum.

The process consists of condensing p-phenetidine with acetone in the presence of a catalyst. The product obtained is then purified. The process conditions have been standardised on 1 kg./batch scale of the finished product. The product has been tested and found to conform to the required standards. Its performance is comparable with imported material.

The main raw materials required for the manufacture of the antioxidant are p-Phenetidine, acetone, catalyst and solvent. Out of these, p-phenetidine will have to be imported for the time being. Although it is being produced by the Indian Drugs and Pharmaceuticals Ltd., Hyderabad, the entire quantity is being consumed for their captive use. A process for the production of p-phenetidine has also been developed by NCL on a sponsored basis. The important items of plant and equipment required are glass lined reactor, vacuum pump, distillation assembly and storage vessels. These are either available locally or can be indigenously fabricated.

MODERNISATION IN INDIAN RAILWAYS

The Indian railways have built their own industrial base and production capacity to meet the varying needs of the country's railway system which is the fourth largest in the world.

The locomotive factory at Chittaranjan, Calcutta, has turned out over 2300 steam locos, besides nearly 300 electric locomotives and over 80 diesel locos since its inception in 1950.

The Diesel Locomotive Works, Varanasi, have turned out 423 broad gauge and metre gauge diesel locomotives since their beginning in 1961.

The Integral Coach Factory at Perambur (Madras) constitutes one of the biggest coach building factories in the world with a capacity to produce nearly 700 coaches per annum. Besides, wagons are being manufactured in a number of workshops, both in the public and private sectors.

The Indian railways have established themselves in the context of signalling and telecommunication equipment manufacture. They are, today, capable of catering to the country's full requirements of tokenless block instruments, control panels, relays, electric point machines, hump retarders and centralised traffic control (CTC) systems.

In an effort to modernise the Railways, it is proposed to include gauge conversion of certain heavily worked metre gauge lines. This programme has already been sanctioned for covering nearly 1630 kilometres of railway lines at an estimated cost of Rs. 1210 million. Another facet of modernisation in the Indian railways refers to the electrification and dieselisation of high density trunk routes. Already 70 per cent of the net tonne–kilometres on both gauges are being hauled by diesel or electric traction. Over 15,600 kilometres on the broad gauge and over 8,600 kilometres on the metre gauge are under diesel traction. It is expected that by the end of the Fourth Five-Year Plan, an additional 3,000 kilometres will be dieselised. Electrification, which now covers over 3,800 route kilometres is also being extended further.

With a view to improving freight traffic, container services were introduced in India as far back as

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early 1966. From the loading of about 130 containers a month in that year, the service today carries over 2600 containers a month. The original containers were of 4½ tonne capacity each. Today, the five-tonne containers have been developed that can be used both on broad and metre gauges.

The modernisation effort of signalling and telecommunication includes increasing provision of automatic block signalling, route relay interlocking at large stations and panel interlocking at certain other stations. The modernisation programme also envisages introduction of tokenless block working, multiple aspect signalling and extensive track circuiting for increased sections.

Automatic train control is also being progressively introduced on certain sections of the high speed trunk routes. Multi-channel long haul microwave radio links, either already under installation or to be installed in the near future, would cover 10,000 route kilometres.

A net-work of teleprinter circuits has already been installed, linking important marshalling yards and offices. They also link up computer centres for controlling movement of wagons. The use of cybernetics is also being applied in an increasing way in railway management and operations. Electronic computers have been introduced progressively for rapid compilation of managerial data.

Nearly 35,000 items of stores are used on the Railways. Efforts continue to be made for attaining self-sufficiency in stores and for reducing further the import content. In 1955-56, the percentage of imported items stood at 25.8 when the total purchases were of the order of Rs. 162.8 million. The import content was further reduced to 8.96 percent in 1970-71 when the stores bill was more than Rs. 3637 million.

With a 59790 route kilometres of railway lines, the railway system in India has 29,700 kilometres of broad gauge, 25,865 kilometres of metre gauge and 4,500 kilometres of narrow gauge. The Indian railways have a fleet of over 11,000 locomotives-9200 steam and 1300 diesel and 625 electric. They also have 25,000 passenger coaches, nearly 1,765 electric multiple units for suburban service and 385,200 wagons. More than 7 million passengers and over 0.5 million tonnes of freight are carried by them daily. □

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INTERNATIONAL BID WON FOR ELECTRICAL EQUIPMENT

The ability of Indian firms to manufacture and supply electrical equipment and accessories of competitive quality and price is amply proved in the winning of global tenders invited by the purchasing authorities in various countries in Asia and Africa.

The Perusahaan Listrik Negara (Ministry of Public Works & Power) Jakarta, the State Electricity Enterprise of Indonesia announced sometime back an international tender for Consumer Boards and Fusegear. M/s. Indo-Asian Traders (Pvt.) Ltd., Nakodar Road, Jullundur-3 were among those who submitted offers. Before submitting the bid, a representative of the firm visited Indonesia. Eventually the Indonesian authorities awarded a contract for the supply of consumer boards and fusegear worth nearly £ 83,000 in favour of the Indian firm. The firm has been supplying their switchgear to various markets but it is their first sizeable contract from Indonesia.

India's total exports of electric power machinery and switchgears were of the value of Rs. 47.48 million in 1971-72 against Rs. 44.68 million in 1970-71. Electric controlgears and switchgears alone are estimated to have secured Rs. 10.9 million and Rs. 7 million respectively in these two years. Federal Republic of Germany absorbed about Rs. 1.15 million worth of these gears, while Kuwait and Malaysia imported worth Rs. 2.2 million each. Nigeria, Singapore, Trucial Oman, Malawi, Sri Lanka, Arab Republic of Egypt, Australia, Burma, Sudan and Uganda were among the other markets. Besides electric controlgears and switchgears, a large variety of other electric power machinery are active on India's export front including circuit breakers, alternators and generators, rectifiers, electric relays and parts, transformers and parts, torque convertors and invertors, furnaces and ovens, electric fans and lamps, electric measuring and controlling equipment, electric motors and starters, electric wires and cables, etc.

In India, fortyeight units are presently engaged in the manufacture of switchgear group of industries which consist of products like circuit breakers, motor starters, contactors, isolators, current and potential transformers, switchboard and control panels, various types of switches, fuses, lightning arrestors, powerline carrier equipment and relays. Production of switchgear items in the organised sector was worth over Rs. 423 million in 1971.

The tempo of production in this line has been indeed encouraging and switchgears upto 3000 amps and HT switchgear of 220 KV are produced. There are plans to adopt 400 KV as the next voltage and the switchgear manufacturers are gearing up their output to meet the potential demand.

Recently, domestic production of power line carrier equipment and sophisticated thyristorised controlled industrial drives has been established. High voltage BBC fuses (11 KV) are also round the corner of production possibility.

SYNTHETIC ENAMELS TO SOVIET UNION

India manufactures and exports today a wide range of chemicals and chemical products. In 1971-72, exports of these items earned foreign exchange valued at Rs. 72.32 million. Of this, the share of organic chemicals was of the order of Rs. 33.30 million while that of inorganic chemicals was Rs. 39.05 million. The prominent importing countries during the year included Japan, U.K., USSR, Italy, Netherlands, Switzerland, Yugoslavia, USA, Sri Lanka, Dubai, Saudi Arabia, Burma, Sudan, Thailand, Vietnam Republic, Iraq, Singapore and Indonesia.

Synthetic enamels of India is a late but firm entrant in world market. In 1971-72, this product earned Rs. 8.3 million in foreign exchange. USSR was the main buyer during the year, having imported more than 50 per cent of the total at Rs. 4.8 million. Iraq, Kuwait, Qatar and Burma were the other prominent destinations. Besides supplying synthetic enamels, India also exported enamel iron utensils, enamel iron fibres and other enamel ironwares. During the year, U.K. was the foremost importing country for enamelled iron utensils while Afghanistan, Burma, Nigeria and Uganda were the prominent markets for enamelled ironware.

During the last quarter of 1972-73, M/s. Dr. Beck & Co. (India) Ltd., Poona-18, secured a big export contract from the Soviet Union for the supply of synthetic enamels valued at Rs. 9.3 million. The supply of the products is intended for Soviet electrical manufacturers. According to the terms of the Agreement, USSR have an option for import of additional supply from the supplier to the total value of over Rs. 3.00 million.

The Poona firm during the period of the last 9 years earned foreign exchange of the order of Rs. 107.1 million. They have been presented awards thrice since 1966 for their outstanding export performance.

In the current year, the firm had bagged a sizeable export contract from the same country for the supply of 3000 tons of terephthalic polyester wire enamel valued at Rs. 18.6 million. During the period July-September 1972, the firm has been able to earn a total of Rs. 5.47 million in foreign exchange through overseas supplies of their products.

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EXPLOSIVES ON EXPORT STREAM

India–manufactured explosives and pyrotechnical products are being sought by the developing countries in the world, particularly in the Afro-Asian region. Although on a limited scale, India exported these products to the tune of Rs. 2.22 million in 1971-72 as against Rs. 1.19 million in 1970-71.

Among the categories that are prominent in the export trade, fuses, primers and detonators constituted the principle group which fetched Rs. 1.68 million in 1971-72. Detonators containing explosives, plain detonators, detonating fuses, safety fuses were the specific items exported in this group. The major importing countries included Iran, Singapore, Burma, U.K., Sri Lanka and Thailand. Propellent powders and other prepared explosives constituted the next important group having earned Rs. 0.39 million. Gun powders and other sorts were exported under the group to Dubai, Tanzania Republic, Kenya and Nepal. Besides, sparklers were exported mainly to Bahrein Islands, Kuwait and South Yemen Republic.

M/s. Indian Explosives Limited, I.C.I. House, 34, Chowringhee, Calcutta-16, one of the firms engaged in the manufacture of blasting explosives and safety fuses, succeeded in exporting explosives and accessories to the tune of Rs. 2.1 million during the year ending September 1972, inspite of keen international competition.

The production range of the firm includes commercial blasting explosives, safety military and detonating fuses, military powder and detonators. During the year, the firm's production of commercial blasting explosives was 31,327 tonnes, safety military and detonating fuses 78.9 million metres, military powder 38 tonnes and that of detonators 43.1 million numbers. The firm has made successful efforts to diversify its product range recently. Its urea and other intermediate products manufacturing plant is situated in Kanpur, Uttar Pradesh and its production of urea amounted to 373,000 tonnes during the year. The firm now offers a complete range of delay detonators including those especially designed for blasting coal off-the-solid. They have developed new products and ranges both for explosives and accessories to meet specific requirements of domestic and export markets. The firm has also set up a pilot plant for the study of chemical reactions and processes. Their Nitrocellulose plant with 1000 tonnes annual capacity is under construction. The plant is expected to be on production stream by mid-1974 and at its full output swing, it is estimated to save foreign exchange valued at Rs. 7.5 million per annum.

India's total production of industrial explosives and accessories in 1971 was of the order of Rs. 190 million as against Rs. 160 million in 1970. As against the installed capacity of 47,000 tonnes, the production of blasting explosives of two units was estimated at 32,320 tonnes, valued at Rs. 125.12 million (1971) while as against the inslalled capacity of 14.10 million coils, the output of safety fuses was estimated at 81.27 million coils, valued at Rs. 11.14 million.

The figures of installed capacity, estimated production, value of production of other products were : 168 million numbers, 106.70 million numbers and Rs. 49.20 million in respect of Detonators and 9 million metres, 5.80 million metres and Rs. 4.45 million in regard to Detonating fuses.

The production of raw materials in the manufacture of explosives, viz. P.E.T.N., styphenic acid and sodium acid and its accessories has been fairly established in India.

RISING OVERSEAS DEMAND FOR TELEPHONIC PRODUCTS

India's export of telecommunication apparatus is maintaining steady growth in recent years. In 1971-72, the exports amounted to about Rs. 30 million as against Rs. 27 million in the preceding year.

Radio broadcast receivers constituted the leading category during the year having netted Rs. 21.70 million, accounting for more than two-thirds of the total export value. Of these, transistor radio receiver sets netted Rs. 17.18 million. The principal buyers of transistor sets included Sudan (Rs. 8.56 million), U.K. (Rs. 4.8 million), People's Republic of Congo, Czechoslovakia, Ethiopia, Ireland, Mauritius and Iraq.

Telephone and Telegraphs apparatus, another category of export in the line, brought in Rs. 3.00 million. Kenya, U.K., Australia, Sri Lanka, Iraq, Singapore, Nigeria and New Zealand were among the prominent buyers. Kenya imported worth Rs. 0.8 million and U.K. above Rs. 0.6 million. Besides, microphones, loudspeakers, amplifiers, transmission and reception apparatus, wireless reception apparatus and radar, radio and navigational aid apparatus and parts are also exported. Of these, wireless reception apparatus and parts (Rs. 1.6 million) were mainly sought by Iran and Qatar while radio and navigational aid apparatus (Rs. 0.5 million) were mainly absorbed by Korea Republic in 1971-72.

M/s. Indian Telephone Industries (ITI), Doorvani Nagar, Bangalore-16, one of the public sector undertakings, exported telephones, telephonic equipment, parts and accessories to the tune of about Rs. 3 million in 1971-72. During the first 9 months of 1972-73 (April-December, 1972), their exports reached a level of Rs. 2.24 million. The products of ITI now reach about 40 countries of the world.

The Bangalore firm's export target for the current financial year (1972-73) has been placed at Rs. 5.00 million. The range of production of ITI includes exchange equipment, telephone instruments, transmission equipment and equipment for satellite communication systems. ITI's telephone production capacity of 250,000 lines is divided into 150,000 lines of strowger type and 100,000 lines of crossbar type. During the Fifth Five-Year Plan, the firm is expected to produce over 1.5 million lines. The firm is now gearing up to produce the equipment to meet the exacting specifications of foreign buyers. It has designed and supplied the multiplex equipment to link India's first earth station for satellite communication set up at Arvi in Maharashtra with the switching centre at Bombay. It has also designed the international telex equipment for the overseas communication services Gateway at Bombay in collaboration with M/s. Bell Telephone Manufacturing Company of Belgium.

ITI's contribution towards import substitution is noteworthy. The items manufactured by ITI now include a broad range of indigenous products to replace imported parts and accessories.

RAILWAY ROLLING STOCK ON EXPORT FRONT

Rails and railway track construction material manufactured in India have come to enjoy wide popularity in overseas markets. In 1971-72, export earning of these items fetched foreign exchange at a value of Rs. 88.22 million as against Rs. 65.25 million in the preceding year, registering over 35 per cent increase.

During the year, export of rails alone netted Rs. 76.60 million (84,770 tonnes). Republic of Korea occupied the position of leading importing country with an intake valued at Rs. 44.44 million (41,853 tonnes). Burma was the next best destination which imported worth Rs. 17.36 million (23,903 tonnes), followed by Argentina at Rs. 7.71 million (9,742 tonnes) and Arab Republic of Egypt at Rs. 7.08 million (9,256 tonnes).

Sleepers and other railway track materials of iron and steel constituted the next important category having brought in Rs. 11.62 million (11,527 tonnes). Among the countries importing this material, Arab Republic of Egypt was the foremost buyer which purchased worth Rs. 5.98 million (7698 tonnes), followed by Iran at Rs. 3.95 million (2403 tonnes). Burma, Thailand, Tanzania Republic, New Zealand, Sudan and Malaysia were the other markets.

M/s. Burn Co., 12, Mission Row, Calcutta, one of the firms engaged in the manufacture of railway rolling stock, iron and steel foundry, points and crossings, refractory and ceramic materials, buildings and furnace insulation, chemical stoneware and acid proof building materials exported railway rolling stock and other products to fetch Rs. 14.8 million during 1971-72. During the year, they supplied shipment against the export order for rolling stock received by them from Yugoslavia.

Besides their activities as the manufacturer and exporter of a wide range of light and heavy engineering products, they also act as structural and mechanical engineers. At domestic level too, they have undertaken orders for rolling stock from Indian Railways as also for construction of the new Hooghly Bridge. They have a chain of workshops at Howrah, Raniganj, Gulfarban, Jabalpore, Niwar and Salem. In 1971-72, their total sales were of the order of Rs. 102.2 million.

EXPORT ORDER FROM BANGLADESH FOR DIESEL PUMP SETS

The Government of Bangladesh invited international tenders in July, 1972 for the purchase of different equipment required for the development of agriculture. Among those who submitted offers were M/s. Kirloskar Oil Engines Ltd., Poona. While submitting their quotations, the firm also made available sample pump sets for test and trial. The samples were air-lifted to Bangladesh. Facing stiff international competition, M/s. Kirloskar Oil Engines Limited were able to win the bid for supply of 2000 pumping sets and spare parts valued at about Rs. 17 million. The order was finalised at the end of September, 1972. It was quoted through the Projection Equipment Corporation of India, New Delhi. The Company have successfully completed the manufacture and supply of the equipment in time.

During 1971-72, a total number of 1658 Diesel pump-sets at an estimated value of Rs. 3.50 million were exported as compared to 1372 numbers at Rs. 2.7 million during 1970-71. Iraq, Iran, Netherlands, Afghanistan and Sudan were the major buying countries.

There are 40 units in the organised sector engaged in the manufacture of power driven pumps in the country with a total licensed capacity of 356,090 pumps. About 70 per cent of the production is for agricultural purposes. A few firms are also engaged in the manufacture of specialised pumps required for petro-chemical/fertiliser industries.

TRANSFORMERS FOR MAURITIUS

M/s. Apex Electricals Private Limited of Bombay have been able to secure an order from the Central Electricity Board, Mauritius for 37 numbers of transformers valued at £ 17041. This is the second order that the Bombay firm have secured from the Central Electricity Board, Mauritius for the supply of transformers. Both the orders were secured against stiff global competition.

During 1971-72, the export value of electric transformers and parts supplied by India was estimated at Rs. 18 million as against Rs. 10.71 million in 1970-71. Malaysia with an intake worth about Rs. 6 million topped the list of buyers for these items. Sri Lanka with an intake valued at Rs. 2.43 million was the second best purchaser, followed by Guinea at Rs. 2 million and Syria at Rs. 1.30 million. Nigeria, New Zealand, Sudan, Thailand, Uganda and Zambia were the other important buying countries.

With an installed capacity of 9627 MVA, production of power and distribution transformers also witnessed an uptrend during the first nine months of 1971-72 as compared to the corresponding period in the preceding year. The production during the two comparable periods was 5,600 MVA and 5,300 MVA.

EXPORT PERFORMANCE AND POTENTIAL

TRENDS IN INDIA'S FOREIGN TRADE

In the first seven months of 1972-73 (April-October 1972), India's overall export trade (including re-exports) was estimated at Rs. 10702.70 million, while the import bill in the same period was Rs. 9961.90 million. Thus the balance of trade in the country's favour was of the extent of Rs. 740.80 million. In the corresponding period of 1971-72 (April-October 1971), the export value was Rs. 8772.60 million while imports totalled Rs. 10439.20 million and thus the balance of trade was adverse to the extent of Rs. 1666.6 million.

In the first four months of 1972-73 (April-July 1972) for which detailed break-up of exports is available commoditywise and directionwise, the foreign exchange earning totalled Rs. 6019 million (including re-exports) as compared to Rs. 5166.42 million secured in the same period of 1971-72 i.e. (April-July 1971). The category of food and live animals fetched Rs. 1578 million as compared to Rs. 1363 million. In this category, marine products registered considerable improvement at Rs. 190 million against Rs. 100 million. The export of cereals and preparations also shot upto the level of Rs. 236 million as compared to Rs. 26 million.

Fruits and vegetables was another sub-category with improved offtake at Rs. 293 million compared to Rs. 240 million. Overseas supply of tea and mate stood at Rs. 399 million in comparison with Rs. 379 million. Feeding stuff for animals also found its way out in increasing quantities having secured Rs. 177 million as compared to Rs. 158 million.

In the category of beverages and tobacco, tobacco exports rose to Rs. 331 million in comparison with Rs. 295 million in the first four months of 1972-73 and 1971-72 respectively.

Among inedible crude materials (excluding fuels), wood, lumber and cork were exported in larger quantities to the tune of Rs. 38 million as against Rs. 22 million. Raw wool, raw cotton, and raw jute were the other major items in this category, whose overseas supply position improved in 1972-73. There was, however, fall in the export earnings of metalliferrous ores and metal scrap. The export of iron ore and concentrates, for instance, were down at Rs. 272 million as against Rs. 316 million.

In the group of mineral fuels and lubricants, export of petroleum and petroleum products brightened up and its value rose to Rs. 36.6 million as compared to only Rs. 21.4 million. Coal fetched more at Rs. 7 million against Rs. 4.7 million.

In the non-traditional sector, the export earning of the chemicals group revealed marginal improvement from Rs. 111.7 million to Rs. 112 million. Specific increases in overseas demand for certain chemicals were, however, evident from the fact that the export value of chemical elements and components rose to Rs. 29.34 million from Rs. 26.28 million while that of dyeing, tanning and colouring materials increased to over Rs. 25 million from Rs. 16 million. Likewise the export trade in essential oils and perfume materials rose to Rs. 30 million from Rs. 28.7 million.

The overseas supply position of leather and manufactures was comfortable. Leather alone fetched Rs. 462.3 million as compared to Rs. 287 million. The entire group of leather and leather manufactures increased from Rs. 289 million to Rs. 474 million.

India's prime foreign exchange earner, namely, jute manufactures, registered uptrend. Their exports brought in foreign exchange of Rs. 957 million as against Rs. 829 million. Cotton manufactures constituted another line of export promise; its value was Rs. 315.5 million in comparison with Rs. 263.5 million. Textile yarn and thread also improved its offtake to Rs. 104.5 million from Rs. 78.3 million. Floor coverings and tapestries were the other area of export growth having netted Rs. 74.8 million against Rs. 56 million.

Among non-metallic mineral manufactures, pearls and precious stones continued to lead the list. They have registered sizeable export growth at Rs. 214.5 million against Rs. 152.6 million. Likewise cement and fabricated materials as also glass and glassware were active in the export market.

In the group of iron and steel, tubes, pipes and fittings; ingots and other primary forms, universal plates and sheets witnessed export progress, although the overall group of iron and steel fetched only Rs. 147.4 million as compared to Rs. 174.8 million. Though a net importer of non-ferrous metals, India succeeded in exporting Rs. 25 million worth of these metals as against Rs. 22.6 million in the corresponding period of the preceding year. The contribution of aluminium exports was sizeable as its export value reached Rs. 11.5 million against Rs. 6.1 million. Machine and hand tools was another segment of export effort which revealed encouraging trend. Their export earning was at Rs. 22 million as compared with over Rs. 17 million. Likewise metal manufactures, household equipment, metal containers for storage and transport and cutlery witnessed improvement.

Although the overall export effort of non-electric machinery items registered decline at Rs. 85 million as compared to Rs. 95 million, export of power generating machinery looked up from Rs. 18.3 million to Rs. 24.8 million. Excepting telecommunication apparatus, all other products in the group of electrical machinery, apparatus and appliances improved their offtake. It includes electrical power machinery and switchgears (from Rs. 15.7 million to Rs. 17.5 million), equipment for distribution of electricity (from Rs. 19 million to Rs. 20 million), domestic electric equipment (from Rs. 7 million to Rs. 13 million) and other electrical machinery and apparatus. In the transport equipment category, road motor vehicles, which have been revealing a consistent trend of export growth continued to prove promising and maintained foreign exchange earning worth Rs. 32.5 million. Road vehicles other than motorcycles fetched Rs. 29 million against Rs. 23 million. Aircraft accessories were exported to the tune of over Rs. 1 million against only Rs. 0.4 million. The export value of professional scientific and controlling instruments, as also photographic and optical goods, witnessed rise at Rs. 26 million as against Rs. 24 million.

Directionwise, the African continent absorbed over Rs. 393 million against Rs. 385 million while North America imported Rs. 1094 million worth of goods against Rs. 111 million. U.S.A. maintained its import level at Rs. 983 million. The Latin American region's offtake was at Rs. 23 million against Rs. 36 million. Of these countries such as Dominican Republic, Balivia, Guatemala, Mexico and Uruguay purchased more. In the Asian continent, ECAFE countries improved their purchases to the level of Rs. 1472 million as compared to Rs. 1295 million. The offtake by Japan rose to Rs. 625 million from Rs. 558 million. Hong Kong, Iran, Nepal, Bangladesh, Thailand and Vietnam Republic were among the other countries that were responsible for the increase. Among other Asian countries are Dubai, Iraq, Kuwait, New Guinea, Qatar, Saudi Arabia, Syria and Yemen Arab Republic which increased their purchases.

The East European countries more than trebled their purchases at Rs. 308 million as against Rs. 1136 million. Increased interest in Indian products was in evidence in respect of Bulgaria, Czechoslovakia, Poland and Soviet Union. U.S.S.R's imports were of the order of Rs. 884.5 million as comapred to Rs. 663.7 million.

Interestingly, all the European Common Market countries have sizeably increased their purchases. Their import value totalled Rs. 609 million as against Rs. 360 million. The Federal Republic of Germany bought worth Rs. 207 million against Rs. 116 million while Italy's purchases were Rs. 130 million as compared to Rs. 65 million. In the European Free Trade Area, the U.K.'s purchases were more at Rs. 572 million as against Rs. 540 million. Sweden, Denmark, Switzerland and Norway were the other EFTA countries that improved their imports from India.

TARIFF ARRANGEMENTS WITH U.K.

With the U.K.'s joining the European Economic Community effective from January 1, 1973, India's Trade Agreement with that country signed in 1939 extending preferential arrangements to India's export trade stands terminated. But the Treaty of Accession by the U.K. to the Common Market provided that the U.K. would harmonize its tariffs with those of the Community over a period of five years. It was also provided that the first increase in the U.K.'s duties on Indian manufactures should take place only effective from January 1, 1974. The transitional period is important for enabling Indian exporters to plan ahead and adapt themselves to the new situation.

Pursuant to the recent discussions that India's Foreign Trade Minister, Mr. L. N. Mishra had with British Ministers, a Joint Communique was issued clarifying the impact of U.K.'s Accession to EEC on India's export trade in the immediate future. In the case of important export products of India's interest such as bulk tea, the time table of tariff arrangements will not involve any change but where there is a duty applicable in the Common Customs Tariff, it would involve a gradual phasing out of British Preferences for Indian manufactures.

While recognising the importance of the Indo-U.K. Trade Agreement in the context of expanded trading relations between the two countries, it was pointed out that the Agreement also afforded non-tariff advantages for certain products of export interest to India. One of these was the opportunity that was afforded for the development of tobacco industry in India by the tobacco manufacturers in the United Kingdom. In recognition of this, U.K. Government is to continue to lend support in facilitating the marketing of India's unmanufactured tobacco in their market, the Communique stated.

In the course of the discussions, the Indian and British Ministers reviewed the prospects of changes in the Common Customs Tariff in respect of goods like jute, textiles and coir which are of particular importance for India. The British side appreciated the emphasis placed by India on the significance of a speedy elimination in duties in the Common Customs Tariff for the competitive prospect of these products; the Indian point of view was also noted that there should be minimum interference for marketing these goods into the U.K. market.

The negotiating Ministers recorded the importance that they attached to the Declaration of Intent by the members of the enlarged European Economic Community as earnest of its will to extend and strengthen the trade relations between India and the Community's expanding market which could provide a wide and valuable outlet for India's exports. The decision by the European Council of Ministers of December 4, 1972 that the Community should prepare a negotiating mandate by the end of January, 1973 in order to conclude a commercial cooperation agreement with India was noted. It was also agreed that in the months ahead, there would be occasions for further consultations about products of particular concern to India. They further agreed to explore possibilities of extending their traditional contacts to sustain the widest range of cooperation between India and the United Kingdom.

EXPORT TRADE OF ART SILK AND RAYON TEXTILES

Export value of Art silk and rayon textiles totalled Rs. 54 million in the first seven months of 1972-73 (April-October 1972). Over 85 per cent of these exports were accounted for by fabrics at a value of Rs. 46.15 million.

The export value of these fabrics was Rs. 44.76 million in the corresponding period of 1971-72. Next to fabrics, tyre cord and yarn secured Rs. 3.9 million in the period April-October 1972. Clothing was another category active in exports, having fetched Rs. 1.52 million.

Interestingly, the offtake of silk and rayon fabrics by the European zone more than trebled in the period reviewed in 1972-73 as compared to the same period in the preceding year. The import value of Europe was Rs. 14.83 million as against Rs. 3.50 million. American offtake also improved by 52 per cent from over Rs. 7 million to Rs. 10.7 million. The Asian Continent purchased about Rs. 10.8 million in each of these periods. African purchases, however, declined from Rs. 17.7 million to Rs. 8.5 million.

ENCOURAGING TRENDS IN PURE SILK EXPORTS

The export earnings from pure silk goods amounted to Rs. 76 million in the calendar year 1972 as against a little over Rs. 70 million in 1971. In the first nine months of 1972-73 (April-December 1972), the export value amounted to Rs. 58.8 million as against Rs. 54.30 million in the corresponding period of the preceding year. Against the context of continuous price hikes in the world raw silk markets in recent months, the improvement registered by Indian exports should represent an effort at stability after a two-year recession during 1971 and 1970.

Increased exports of tasar silk products by 18 per cent at Rs. 13.59 million in 1972 have sizeably contributed to the overall rise in pure silk products exports. Mulberry silk goods that fetched Rs. 62.45 million in 1972 revealed an improvement of 6 per cent over their foreign exchange earning in 1971.

In the first nine months of 1972-73, the share of mulberry products was Rs. 49.4 million as compared to Rs. 45.4 million in the same period of 1972 and that of tasar was Rs. 9.4 million as against Rs. 8.9 million.

In terms of quantity, the mulberry exports were of the order of 3.9 million square metres in 1972 in comparision with 3.85 million sq. metres in 1971. The quantum of tasar exports was 676,000 sq. metres against 645,000 sq. metres.

The unit export price of both mulberry silk and tasar silk goods also improved in 1972 as compared to that in 1971.

Non-traditional markets of Western Europe, Japan, U.S.A., Australia, and East European countries continued to account for over 25 per cent of mulberry silk products' export trade. Their share at Rs. 48.25 million during 1972 was up by 7 per cent over the 1971 level. West European countries comprising the European Economic Community, the member countries of European Free Trade Area and Nordic countries with a combined offtake of Rs. 32.8 million accounted for a share of 53 per cent of total mulberry silk goods exported in 1972. The Federal Republic of Germany with its imports at Rs. 14.5 million leads the list of purchasers from India while imports by France totalled Rs. 6.8 million, U.S.A. Rs. 4.65 million, Japan Rs. 3.34 million, and the U.K. Rs. 3.45 million in 1972.

Significantly, the East European countries registered a four-fold improvement in their offtake of mulberry silk products at Rs. 5.26 million over the levels of exports during the past three years. Poland had an offtake of Rs. 3 million, followed by Czechoslovakia at Rs. 1.03 million, German Democratic Republic Rs. 0.63 million and Yugoslavia Rs. 0.38 million.

In the traditional markets, Asian countries absorbed 13 per cent of total mulberry exports from India while the African countries accounted for about 9 per cent. Singapore imported worth Rs. 3.35 million, followed by Kenya and Malaysia at Rs. 3.1 million and Rs. 2.7 million respectively.

Of the mulberry silk products exported, dress materials fetched Rs. 22.2 million in 1972 as compared to Rs. 21.2 million in 1971. Exports of scarves, sarees and readymade garments have also registered rise in terms of value. Scarves alone secured Rs. 18.4 million in 1972 as compared to Rs. 17.14 million in the preceding year. Sarees earned Rs. 12 million as compared to Rs. 10 million. Readymade garments brought in Rs. 7 million against Rs. 5.6 million. The export of ties, however, showed marginal decrease at Rs. 2.2 million in 1972 as compared to Rs. 3.9 million in the preceding year.

The 18 per cent increase in the export trade of tasar silk goods at Rs. 13.6 million during 1972 was possible mainly by the increased offtake of Federal Republic of Germany, U.S.A. and Sweden. Export to U.S.A nearly trebled from Rs. 0.47 million in 1971 to over Rs. 1.2 million in the following year. The intake of France, Italy, Switzerland, Japan and Sweden was Rs. 1.1 million, Rs. 0.65 million, Rs. 0.52 million, Rs. 0.53 million and Rs. 0.38 million respectively in 1972. Of these, Switzerland and Sweden revealed trends of increased offtake.

IMPROVEMENT IN HANDLOOM EXPORTS

Handloom exports in the first eight months of 1972-73 (April-November 72) increased by about 15 per cent at about Rs. 205 million. On the basis of the export orders on hand, it is estimated that handloom exports might exceed a level of Rs. 330 million in the full year.

The export value of cotton textile fabrics totalled Rs. 154 million in the above period as against Rs. 128 million in the corresponding months of the preceding year. A major portion of the orders received by the cotton handloom fabric exporters was for readymade garments. These garments are reported to have so far fetched Rs. 58 million against Rs. 27 million in the comparable periods. The Handloom Export Promotion Council, Madras expects that the total exports of readymade garments might touch Rs. 120 million in 1972-73 as against Rs. 55 million in 1971-72.

Overseas demand for Indian handloom textiles has particularly picked up in the markets of U.K., U.S.A., Sweden, Norway, France and Federal Republic of Germany. The Australian and Japanese markets also appear promising for sizeable imports. In fact, the offtake by these two markets is said to have increased by 10 to 15 per cent during the last three years. An interesting feature of handloom exports in the current year pertains to the fact that the most of the new importers have come to place sizeable orders. For instance, Japan has already imported worth Rs. 7 million of cotton handlooms against Rs. 4.13 million in 1971-72. Again, Australian purchases totalled Rs. 3.6 million in the last year while the monthly average upto November 1972 has been in the range of Rs. 1 million.

In the first half of 1972-73 several important markets have registered increased purchases of cotton handlooms from India. The West German offtake was of the order of Rs. 26.5 million against Rs. 26.20 million in the first half of 1971-72. Sweden bought Rs. 28.10 million worth against Rs. 15.3 million and Netherlands Rs. 2.4 million as compared to Rs. 1.3 million. Equally promising are the East European countries particularly USSR and Poland, which are new markets for Indian handlooms in recent times. Among the traditional markets, important buyers include Nigeria, Malaysia and Singapore. The Handloom Council in Madras is to be the canalising agency for Indian supplies to Bangladesh which imported Rs. 10 million worth of handlooms in 1971-72.

The handloom Industry's export performance improved from Rs. 261.20 million in 1970-71 to Rs. 300 million in 1971-72. Till the other day, India's handlooms were exported only to traditional markets such as Burma, Sri Lanka, Malaysia, Singapore, as well as the West Asian and African countries. While the exports to the traditional markets are being maintained around

Rs. 100 million for the last three years, the exports to non-traditional markets increased to about Rs. 200 million. Variety-wise, the cotton handloom goods recorded sizeable improvement in these years. The export of cotton handloom materials which was only Rs. 10.8 million in 1969-70 touched Rs. 14.5 million in 1971-72. The export of cotton handloom garments has been more specifically on steady uptrend; their overseas supply value was only Rs. 12 million in 1969-70 while it improved to Rs. 59.4 million in 1971-72.

COIR PRODUCTS EARN MORE FOREIGN EXCHANGE

The first nine months of 1972-73 (April-December 1972) saw the growth of India's export trade in coir and coir goods. In this period, over 374,000 quintals of these products valued at Rs. 114 million were exported as compared to 382,570 quintals at a value of over Rs. 108 million in the corresponding period of 1971-72. Obviously, the unit value has gone up as compared to the same period in the preceding year.

The major item responsible for the increase in the export trade was coir yarn. Its exports were of the order of Rs. 51 million in the first three quarters of 1971-72 while they rose to Rs. 62.0 million in the same period of the following year. Curled coir was another item which improved its export performance.

The offtake of coir fibre, coir mats and mattings, coir rugs and carpets, however, registered decline. The export of mats and mattings totalled Rs. 44 4 million in the period April-December 1971 while they fetched Rs. 43.9 million in the same period of 1972. The export of coir rugs and carpets declined substantially from Rs. 11.45 million to Rs. 4.8 million only.

In 1971-72, coir and coir goods were exported to the tune of Rs. 148.5 million as against Rs. 138.25 million in 1970-71. Of this, coir yarn fetched Rs. 72.2 million, coir rugs and carpets Rs. 16.85 million and coir mattings Rs. 7 million. In addition to these principal varieties, coir fibre, coir cordage and ropes, curled coir, rubberised coir goods and other types of coir were prominent in export trade.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

FIFTH FIVE YEAR PLAN

AN OUTLINE

Eradication of poverty and self-reliance are the two major objectives of India's Fifth Five Year Plan (1974-75—1978-79). The main elements of the Plan Strategy for the realisation of these objectives include the attainment of a 5.5 per cent overall rate of growth and Gross Domestic Product, expansion of productive employment opportunities; the National Programme for Minimum Needs covering elementary education, drinking water, medical care in rural areas, nutrition, home-sites for the landless labour, rural roads, rural electrification and slum improvement and clearance; extended programmes of social welfare, emphasis on agriculture, key and basic industries and industries producing goods for mass consumption; an adequate public procurement and distribution system for assured supply of essential consumption goods at reasonably stable prices; vigorous export promotion and import substitution, rigorous restraints on essential consumption, an equitable prices-wages-incomes balance and institutional, fiscal and other measures for reduction of social, economic and regional inequalities.

The Plan aims at zero net foreign aid by 1978-79. It is assumed that the Gross external aid over the five-year period in the Fifth Plan will be of the order of Rs. 30,000 million. Besides the heavy debt service obligations estimated at Rs. 23,600 million over the plan, the other major strain on the balance of payments is the large requirement for maintenance imports, constituting about 80 per cent of total estimated imports. The satisfactory solution to meet maintenance requirements of the economy would be to produce the needed goods, unless domestic production at reasonable costs is not feasible. This would point to the need for accelerated creation and fuller utilization of capacity in fields like steel, non-ferrous metals, fertilizers, crude oil, petroleum products, engineering ancillaries and basic chemicals. Simultaneously efforts will be undertaken to consolidate self-sufficiency in foodgrains and to step up the output of cotton and oilseeds.

The sectoral pattern of growth envisaged in the Approach Paper of the Fifth Plan recently endorsed by the National Development Council, indicates that the overall annual rate of growth in terms of output, will be 4.73 per cent for agriculture, 8.30 per cent for mining and manufacture and 10.63 per cent for electricity,

Some of the physical targets envisaged by 1978-79 as compared with 1973-74 are as follows (figures indicated against each item are for 1973-74 and 1978-79 respectively) : Foodgrains (115 million tonnes and 140 million tonnes), coal (80 million tonnes, 141.2 million tonnes), iron ore (42 million tonnes, 66.5 million tonnes), crude oil (7.70 million tonnes and 7.77 million tonnes), sugar (4.2 million tonnes, 5.88 million tonnes), cotton yarn for sale (475 million kg. and 642.2 million kg.), cotton cloth (8500 million metres and 10703 million metres), art silk fabrics (1200 million metres and 1513 million metres), woollen fabrics (17.0 million metres and 24.2 million metres), jute manufactures (1.3 million tonnes and 1.64 million tonnes), paper and paper board (850,000 tonnes and 1.33 million tonnes), newsprint (65,000 tonnes and 159,300 tonnes), nitrogenous fertilizers (1.6 million tonnes and 3.9 million tonnes), phosphatic fertilizers (450,000 tonnes and 1.17 million tonnes), sulphuric acid (1.5 million tonnes and 3.35 million tonnes), crude petroleum products (20.5 million tonnes and 36.0 million tonnes), cement (18.0 million tonnes and 26.8 million tonnes), mild steel (5.8 million tonnes and 9.4 million tonnes), pig iron for sale (2.0 million tonnes and 3.8 million tonnes), alloy and special steel (350,000 tonnes and 518,000 tonnes), aluminium ingots (210,000 tonnes and 423,000 tonnes), electric motors (3.45 million H.P. and 5.65 million H.P.), radios (3.25 million numbers and 3.85 million numbers), watches and clocks (1.58 million numbers and 2.2 million numbers) and electricity generation (78.0 billion kwh and 129.3 billion kwh).

The total investment envisaged during the plan period at 1971-92 prices will be of the order of Rs. 453,150 million. Of this, public sector investment will be Rs. 355,950 million and that of private sector Rs. 155,700 million. The projected distribution of investible resources between the public and private seotors is in the ratio of 65.6 : 34.4.

In order that the expanded money incomes may have a commensurate impact on the living standards of the poorer sections, the plan underlines the need to ensure that essential goods are made available at reasonably stable prices. As such, the plan envisages adequate increases in the output of certain basic consumer items : foodgrains (22 per cent), sugar and gur (28 per cent), vegetable oils (30 per cent), cotton textiles (30 per cent) and kerosene oil (60 per cent).

STRIDES IN NUCLEAR MEDICINE

Apart from producing electricity, atoms are now being used in a number of Indian hospitals to diagnose diseases. Some seventy laboratories, many of them attached to hospitals, are using radioactive atoms to detect abnormalities in brain, thyroid glands, lungs spleen, heart and a number of organs including placenta.

As the atoms move inside an organ like a spy with a transmitter, sensitive instruments placed over body register all the individual radiations emitted by the atoms and make up a picture of the organ a view from the inside. In Bombay alone, more than fifteen thousand patients have so far been diagnosed at the Radiation Medicine Centre, the largest of its kind in India and recognized by World Health Organization as Regional Reference Centre for Nuclear Medicine in South East Asia.

X-ray and ultrasonic images essentially give the size of an organ and detect deformities and presence of foreign objects. But pictures obtained with radioactive tracers can in addition tell whether or not chemical functions such as metabolism are taking place properly inside an organ. Lack of iodine metabolism by thyroid glands, for instance, results in goitre. Using radioactive iodine (incidentally iodine prefers to spy on thyroid glands), doctors say they can detect not only any swelling of gland but also find out if thyroid metabolizes iodine properly.

Like iodine for thyroid gland, there are isotopes specific to each organ of body and all of these radiopharmaceuticals are routinely produced in Nuclear Reactors at Bhabha Atomic Research Centre (BARC) in Bombay.

A new branch of medicine called nuclear medicine has already been established on sound footing in India like in Western countries. In fact, both universities of Delhi and Bombay are offering postgraduate diplomas in nuclear medicine for medical graduates.

ON INDIA'S OIL REFINING

The United Nations was recently urged upon by India's Minister for Petroleum and Chemicals to enable the developing countries to discover new crude oil supplies and thus to assist them to overcome their problems of internal oil resources and technology. The developing countries do not have sufficient indigenous energy resources and are in dire need of importing energy for their rapid economic development to raise the standard of living. As they do not have enough foreign exchange for imports, the lack of resources hampers their efforts to build up the oil resources. They are also concerned in the recent trends in world oil prices which might pose a serious threat to their development efforts.

India's import bill, for instance, might well shoot up, if the present price trend were to continue, from the present level of about $ 350 million a year to as much as $ 1406 million by 1980 and $ 2200 million by 1985 whereas the total export earning last year was of the order of $ 2220 million. A strong base of domestic refining capacity would mean for the oil importing countries not only a reduction in the foreign exchage burden but also other important benefits like regularity of product availability, reduced dependence on the powerful international companies, increased opportunities for industrial development and a greater employment potential. But unfortunately the majority of developing countries suffer from lack of capital resources as also basic scarcities in technical and managerial skills, equipment and related manufacturing facilities.

In India, the demand for petroleum products which was a mere 3.3 million tonnes in 1950 rose to about 22 million tonnes in 1972 and is expected to go up further to nearly 50 million tonnes by 1980. In 1950, the country only had a small refinery in Assam established as long ago as 1883 with a capacity of 0.25 million tonnes. To cope with the rising demand, agreements were entered into by the Indian Government for the setting up of the three refineries in India by Burmah Shell, Esso and Caltex, in 'fifties. Since then, the policy has been to develop oil refining in the country's public sector. The 'sixties saw the commissioning of the three refineries in the public sector based on indigenous crude of Gauhati (1962), Barauni (1964) and Jawahar Nagar in Gujarat (1965). Two coastal refineries based on imported crude were also set up at Cochin and Madras with minority foreign assets.

The setting up of these refineries in the public sector led to considerable experience and expertise being gained in construction and operation of indigenous refineries substantially reducing dependence on imported technical know-how and personnel. Indian engineers, technicians and managers have now developed capacity not only to run complete refineries but in designing and construction of new units with the exception of a few sophisticated items involving licensed know-how. Besides a new refinery in advanced stages of completion at Haldia near Calcutta and expansion of Cochin and Gujarat refineries, new refineries are proposed to come up within the next few years, at Mathura, Bongaigaon and Goa. The proposed Mathura refinery with a capacity of 6 to 8 million tonnes, is India's most ambitious effort in the refining field so far. Apart from the complexities from the point of view, of both design and technology, it will also involve for the first time in the country the installation of a single buoy mooring in deep water capable of receiving 200,000 to 250,000 DWT tankers. Their offshore terminal is to be connected through a 1200 kilometre pipeline to the inland refinery at Mathura.

From just 6.25 million tonnes in 1960, the indigenous production of crude oil went up to over 7 million tonnes in 1972, representing about a third of the total crude processed in the country.

PRODUCTION REVIEW OF CARBON PRODUCTS

The Indian economy has a sound manufacturing base for a variety of carbon products including cinema arc carbons, calcined petroleum coke, pencils, midget electrodes, graphite electrodes and anodes, electropaste and carbon blocks.

With an installed capacity of 7.2 million pairs, the output of cinema arc carbons in 1971 was estimated at over 8 million pairs. In fact, the licensed capacity in the industry was of the order of 18 million pairs for that year. Presently, the production of these cinema arc carbons cover only high intensity variety of carbons. Efforts are being made for the establishment of capacity for the manufacture of rotating cinema arc carbons also.

The output of calcined petroleum coke is estimated at 70,870 tonnes in 1971 while the installed capacity in this line is 65,000 tonnes. A new unit with a capacity of 45,000 tonnes is on trial production.

Production of graphite electrodes and anodes for thermo-electrical purposes and electrolytic cells was of the order of 3900 tonnes in 1971 as against the installed capacity of 5400 tonnes. The existing unit engaged in electrode manufacture has active plans to expand capacity. Also plans for setting up further capacity by other manufacturing units are afoot.

Production of electrode pastes during 1971 was estimated to be 8580 tonnes compared to only 5800 tonnes during 1970. The installed capacity in this line was 15,000 tonnes (1971). Production of carbon rods used for the manufacture of dry battery cells is also revealing encouraging trend year to year. As the demand for these rods far exceeds indigenous availability, steps are being taken to create additional capacity.

There are three major units in the organised sector with an installed capacity of about 121 million numbers for the production of pencils whose estimated production was 78.34 million numbers in 1971. The output of carbon blocks for which the installed capacity is of the order of 80,000 tonnes was estimated at 61,000 tonnes in 1971.

Some of the carbon products have already entered the country's export trade. Arc lamp carbons were supplied to Sri Lanka during 1971-72 to fetch about Rs. 0.2 million. Carbon brushes were exported to Abu Dhabi, Burma and Canada, though in small quantities. Black carbon for rubber industries was supplied mainly to Kenya while other varieties of carbon block were exported to the tune of Rs. 2.4 million, Sri Lanka, Zambia, Tanzania Republic and Kenya being the major buyers.

CENTRAL MARINE DESIGN ORGANISATION TO BE SET UP

The Government of India propose to set up a Central Marine Design and Research Organisation to meet the current deficiency in the development of capacity for designing sophisticated ocean-going ships in India. As a first step to achieve the object, the Government propose to send a team of technical experts to tour abroad for studying the working of such centres for research and design.

The three shipyards in India - Hindustan Shipyard, Mazagon Docks and Garden Reach Workshops have had their expansion programmes, but even after completion of their schemes during the forthcoming Fifth Plan period, the total annual indigenous shipbuilding capacity by 1978-79 is estimated to be of the order of 200,000 GRT only. This indigenous capacity would include the capacity of the Cochin Shipyard which is scheduled to be completed by the end of September 1975. There would thus still be a gap between India's shipbuilding capacity and her requirement of shipping tonnage.

The shipping tonnage has increased to 2.6 million GRT with 258 ships as by the end of 1972. Another 1.5 million GRT are on order.

Even with the proposed expansion in shipping tonnage, the country still carries, on the whole, only about 2 per cent of India's maritime trade. It is in this context that the Indian Government are thinking of expanding the country's merchant marine fleet and of having a total of 10 million GRT by the end of the Fifth Five-Year Plan. Efforts are being made to expedite the work of a Study Group for giving its technical advice regarding the proposed shipbuilding yard at Haldia.

FERTILIZER PLANTS WITH INDIGENOUS TECHNOLOGY

Five new fertilizer plants with a total capacity of 1.85 million tonnes, proposed to be set up by M/s. Engineers India Limited, in collaboration with Japan are to be fully based on indigenous technology and technical services. The foreign exchange component for setting up these plants would be minimum compared to the other plants already working in India.

The total capital outlay for the five plants is to be of the order of Rs. 5000 million including Rs. 1700 million in foreign exchange, according to present estimates. After negotiations with the Japanese collaborator M/s. Toyo Engineering Company, the foreign exchange content is expected to be decreased further. There is a guaranteed provision of work completion time of thirty months for each of these projects, the five plants being spaced six months apart. Full production can be achieved within a year of commissioning of each plant compared to the prolonged gestation period experienced by some of the other public sector fertilizer plants in India.

The proposal envisages setting up three inland fertilizer plants and two coastal fertilizer plants, all in public sector.

The plants when in full production are expected to help India in net saving of Rs. 12,080 million in foreign exchange for fertilizer imports.

The fertilizer industry in India has witnessed notable developments over the years. In 1960-61, the production of both, nitrogenous and phosphatic fertilizers was merely 164,440 tonnes. The output achieved in 1971-72 is 1,243,000 tonnes. The installed capacity was of the order of 1.46 million tonnes of nitrogenous and 0.5 million tonnes of phosphatic fertilizers (1972). The fertilizer projects on production stream in the public sector have a total capacity of 824,000 tonnes and those in the private sector 640,000 tonnes in terms of nitrogen.

Among the public sector companies engaged in the fertilizer manufacture, the Fertilizer Corporation of India has presently five operating units and seven units are under construction. M/s. Fertilizer and Chemicals Travancore Limited (Kerala) has a running unit. M/s. Madras Fertilizers Limited have facilities for the manufacture of ammonia, urea and complex fertilizers. M/s. Pyrites, Phosphates and Chemicals Limited are engaged in exploitation of pyrite deposits to manufacture sulphur and sulphuric acid. Besides the projects in the public sector, a number of units in the private sector are also in operation. The units at Kota, Baroda and Coromandal have obtained optimum or near optimum levels of production. After completion of the projects at hand, India's fertilizer capacity in terms of nitrogen is expected to reach 4380,000 tonnes and in terms of phosphates 14,87,000 tonnes level.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

IMPORT SUBSTITUTION FOR WATTLE EXTRACT

The Central Health Research Institute, Madras have recently developed a process for the production of modified cutch extract which can well substitute wattle extract, essential for the manufacture of heavy industrial and chrome retan leathers.

The modified extract could also be used for the preservation of fishing nets, prevention of corrosion in boilers, in oil drilling operations, in textile industries etc.

The process is for modifying concentrated liquid cutch extract with certain chemicals at a high temperature. In case, solid or powder extract is to be manufactured, the treatment is given prior to the drying of the extract. Even the ordinary solid extract as marketed now can be treated, if required, before use.

The modified product both in liquid and powder form has been tested in the CLRI laboratory and found to be satisfactory. The application conditions of the product in tannage, using the material alone or blended with other materials have been standardized.

The manufacture can be economically undertaken by the existing manufacturers of cutch extract in both, small and large scale units. However, manufacture of solid or spray dried extract can be economically carried out only in medium or large scale units.

The main raw material required in the process is the original cutch extract either in solid or liquid form. This material is indigenously available. Cutch extract in solid form was imported from Nepal and other neighbouring countries during 1970-71.

The main items of equipment required are double jacketted reaction kettle complete with-lid, stirrer condenser and other accessories and low-pressure boiler for heating upto 100-110°C. All of these are indigenously available.

GLASS CERAMIC MATERIAL DEVELOPED

The Central Glass and Ceramics Research Institute (CGCRI), Calcutta have developed a glass-ceramic material for production of industrial jewels, textile ceramics and such other articles required to posses high mechanical strength, hardness, chemical durability and electrical resistance. This is significant considering that the existing process of making industrial jewels from sapphire is expensive while abrasion resistant textile ceramics are being imported.

The process developed by CGCRI consists of melting the raw material to a homogenous glass at temperatures not exceeding 1450°C. The desired articles are then fabricated out of the molten glass by blowing, drawing, casting and sometimes by pressing. The articles are heat-treated at a temperature below 1000°C. Sand, clays, magnesium-bearing minerals and minerals used as nucleating agents are the main raw materials required for the manufacture of this type of glass-ceramics. All these are indigenously available. Pot furnaces complete with blower, burner and pipe fittings, electrical furnaces for annealing and controlled crystalisation, press machine, moulds and grinding wheel are the important items of plant and machinery which are indigenously available.

OPTICAL WHITENING AGENTS FOR SYNTHETIC FIBRE

A process to produce optical whitening agents which are used as optical whiteners for synthetic fibre has been successfully developed by the National Chemical Laboratory (NCL), Poona.

Such compounds are not at present manufactured in the country and are being imported under various trade names such as Mica White ATN. Exact demand for such optical whiteners is not available, but it is estimated that the demand of such whiteners is about 20 tonnes per annum.

The process involves four steps. The raw material is sulphonated, oxidised to form an anhydride which is converted into penultimate product and this is then converted into the final compound which is purified to obtain the saleable product. The work has been conducted on laboratory scale and the know-how has been standardised on 1 Kg./ batch scale.

Raw materials required in the process are acenaphthene, dichlorethane, chlorosulphonic acid, methanol, sodium hydroxide, aqueous methylamine, acetic acid and sodium dichromate. Out of these, acenaphthene and methylamine will have to be imported initially. However, methylamine will soon be produced by the Fertiliser Corporation of India, Trombay, Bombay and acenaphthene could be made available from coal tar fraction of Hindustan Steel Ltd., once a regular offtake is established. Other raw materials are indigenously available.

Sulphonation kettle, S. S. kettle, reactor wooden vats, wooden nutsche centrifuges are the important items of plant and machinery. All the equipment can be fabricated indigenously.

SCOPOLAMINE HYDROBROMIDE

Scopolamine Hydrobromide, which is used in pharmaceutical industry as a preanaesthetic in surgery and childbirth, in opthalmology and prevention of motion sickness has been developed by the Regional Research Laboratory (RRL), Jammu from the seeds of Datura innoxia and Datura metel.

The hydrobromide is soluble in water and is used as a sedative. It is also used for producing amnesia and partial analgesia in labour. It is the best among all the drugs tested for preventing sea or air sickness. At present, there is no indigenous production of material and the entire requirements are met through imports. Datura innoxia and Datura metel seeds contain scopolamine and a fixed oil. The latter is used for soap making and for other non-edible purposes.

The process now developed consists of defatting the seeds which are extracted with benzene. The bases are then separated as their sulphates, from which scopolamine is obtained as its hydrobromide. The work has been conducted on 500 kg. seed per batch scale. The yield of scopolamine hydrobromide is 0.1

per cent (w/w) while 15-20 per cent of fixed oil is obtained as a by-product. The product conforms to I.P. standards.

The raw materials required in the process are Datura innoxia and Datura metel seeds. The Datura innoxia is found in Western Himalayas, the hilly regions of the western parts of Deccan Peninsula and a few other places in India. Datura metel, on the other hand, is a subglabrous spreading herb sometimes becoming shrubby. It is available abundantly throughout India and is occasionally grown in gardens. The dried leaves and flowering tops of Datura metel and those of Datura innoxia have been known for their narcotic and anti-spasmodic properties. The drug used is collected mostly from wild plants. Other raw materials like solvents, sulphuric acid and liquor ammonia are all indigenously available.

The major items of plant and equipment required in the process are mild steel extractor, grinding machines, boiler distillation unit and deep freeze. All these can be fabricated indigenously. Since the process involves the use of solvents, safety measures will have to be taken.

PROFILE ON BUILDING AND CONSTRUCTION EQUIPMENT

The building and construction equipment industry is well established in India and is capable of manufacturing a wide range of equipment including building and construction machinery, earth moving machinery, air and gas compressors, conveyors and material handling equipment including light, medium and heavy structurals.

The building and road construction machinery has a licensed capacity of Rs. 100 million per annum. With an installed capacity of about Rs. 72 million, the output during 1971 was of the order of over Rs. 15 million. The industry can today manufacture a variety of machinery such as concrete mixers, vibrators, hot mix plants, tar boilers, crushers and granulators, pre-stressed concrete equipment, asphalt mixers, paver finishers and pile driving equipment.

The earth moving machinery and construction equipment is, however, a more established line of manufacture, capable of producing complex products like road rollers, excavators, shovels, draglines, mobile cranes, crawler tractors, dumpers, scrappers, motor graders, wheeled loaders and fork lift trucks. All these industries are considered to be of priority in the country as they find application in important sectors such as irrigation and power projects, road development work, mining, material handling, road construction and air-fields.

Presently there are seven units manufacturing road rollers with a licensed capacity of 2340 numbers and an installed capacity of 1520 numbers per year. Their actual out-turn in 1971 was 336 numbers but the rate of production is expected to be picked up fast in view of the rising indigenous demand. An interesting feature of the road roller industry is its achievement of a high degree of indigenisation which is around 97 per cent.

The installed capacity of excavators, shovels and draglines is in the neighbourhood of 150 numbers per year, of which two-thirds (about 100 numbers) was realised in 1971. The private sector in India manufactures shovels of 1.17 cubic metre to 2.7 cubic metre capacity while the public sector project at Ranchi, namely, M/s. Heavy Engineering Corporation turns out bigger sized shovels of 4.6 cubic metre capacity. One of the manufacturing units has recently introduced a small size shovel of 0.58 cubic metre capacity. In the manufacture of small size shovels, the indigenous content has reached a high degree.

Mobile cranes are being manufactured in the country upto 12.5 tonnes capacity. With an installed capacity of 188 numbers, a single unit in the line was able to produce 67 numbers in 1971. Besides, a new manufacturer is to soon come up for the production of hydraulic truck mounted types of mobile cranes. There are plans for yet another unit to come up for the production of mobile cranes including recovery cranes with a capacity of 400 numbers every year. Even the existing unit is to take up the manufacture of hydraulic mobile cranes and truck mounted cranes upto 30 tonnes capacity. In this industry too, indigenisation of components has advanced rapidly.

The development of crawler tractors has helped assist the exploitation of virgin lands for cultivation as also for jobs connected with minor irrigation. Five units were licensed to produce crawler tractors of the range of 50-480 H.P. and are at various stages of development. The country's total demand is being met for crawlers upto 250 H.P. The installed capacity for these tractors stands at 600 numbers and the production in 1971 was of the order of about 240 numbers. Total annual licensed capacity by the end of 1971 was of the order of 1540 numbers. M/s. Bharat Earth Movers Ltd., Bangalore in the public sector have been licensed for a total capacity of 1050 numbers. Another private sector unit has been licensed to manufacture the tractors for undertaking the production of 227 H.P. and 485 H.P. capacity at the rate of 90 numbers every year. A letter of intent was issued to a third unit for the manufacture of 50 H.P. and 90 H.P. tractors with a capacity of 400 numbers per annum. The units engaged in this line have collaboration facility from Japan, U.K., Yugoslavia and the Federal Republic of Germany. Besides the crawler tractors, the production of various attachments such as hydraulically operated bull-dozers, angle-dozers and rippers as also heavy agricultural implements has been planned. The engines required for fitment to these crawler tractors have been sufficiently developed and their production is on uptrend. Additionally, the under carriage parts with a high wear and tear provision are also being produced indigenously. In all these cases, foreign collaboration has helped achieve higher standards of quality.

In respect of manufacture of dumpers, the present installed capacity is in the vicinity of 250 numbers per year and the actual production was nearly 60 numbers in 1971. In fact, M/s. Bharat Earth Movers, Bangalore have a licensed capacity of 300 numbers and their production ranges from 20 to 50 tonnes capacity dumpers. Another unit in the private sector has an annual licensed capacity of 100 numbers and has already taken up the production of 25 tonnes capacity. As for scrappers and motor-graders, their installed capacity by 1971 was 75 numbers and 60 numbers respectively. The production of scrappers was 47 numbers and that of motor graders was 26 numbers in that year. A high degree of indigenous content has been achieved in these two areas of production also. Wheeled loads of 1.5 cubic metre capacity are being produced by a public sector unit in Bangalore while a second unit in the private sector has been licensed for undertaking the production of front-end loaders with an annual capacity of 50 numbers. The Bangalore unit in the public sector has plans to produce bigger size loaders of 2 to 2.5 cubic metre capacity. The actual out-turn of these both was 47 numbers in 1971. Year after year, the output of fork-lift trucks also improved 543 numbers in 1970 and 843 numbers in 1971 - with seven units in the line, the installed capacity is of the order of 2000 numbers per year. Interestingly, besides meeting the internal demand these trucks have even been placed on the export stream in recent years.

Most of the varieties of air and gas compressors are now being produced in India with as much as 95 per cent of indigenous content. The production in this field picked up due to a variety of end-uses that the compressors are put to - ranging from mines and fertilizer industry to petro-chemical complex, garages, workshop for cleaning and for operating equipment like air drills and air motors. The compressors that are being manufactured range from 2 CFM to 4500 CFM in volume of delivery and the pressure ranges upto 3000 pounds in the small volume, say upto 40 CFM and about 250 to 500 pounds in middle range upto 1000 CFM and 150 PSIG in the ranges over 10,000 to 40,000 CFM. Two public units have been permitted recently by the Indian Government for manufacturing both air and gas compressors in the ranges higher than 4,500 CFM. One of these units is to produce centrifugal compressors and the other reciprocating type of compressors. While the production of air compressors was only 2700 numbers in 1965, it rose to an estimated 5060 numbers in 1971 at a value of over Rs. 76 million.

Conveyors of varying types such as belt conveyors, chain conveyors, slat conveyors, gravity conveyors, roller conveyors as well as other complicated material handling equipment including wagon tipplers, stackers, reclaimers, ship loaders and spreaders are now being produced in India and in sufficient quantities. In the public sector, M/s. Mining and Allied Machinery Corporation, Durgapur now are in a position to supply conveying equipment of various types while M/s. Heavy Engineering Corporation can manufacture stackers and reclaimers to suit customers' specific requirements. There are plans to manufacture hydro-pneumatic ash handling plans also. Currently 18 units are engaged in the production of conveyors and their actual production in 1971 was of the order of Rs. 110 million as compared to Rs. 79 million in the year that preceded.

Steel structurals is another important line of manufacture in the building and construction equipment industries. The growth and diversification in this industry has indeed helped the strengthening of several infrastructural industries in India. The structural industry covers a wide range of products including building structures for steel and other plants, trusses for factories, steel bridges both for road and rail, penstocks, hydraulic gates and transmission towers. Over 100 firms in the organised sector are today producing these structurals with an installed capacity of nearly 0.7 million tonnes per year. These manufacturing units include two public sector projects M/s. Triveni Structurals, Allahabad and M/s. Heavy Engineering Corporation, Ranchi. With several more schemes having been approved, the capacity that will be available in this line is to grow upto the level of 0.8 million tonnes per year, in the near future. The actual production of structurals in 1971 was estimated at 190,000 tonnes, valued at Rs. 300 million. The anticipated demand by 1973-74 at 580,000 tonnes is hoped to be fully met in view of the capacity that is already available.

A wide range of products turned out by the building and construction machinery industrtries have come to contribute to India's export trade. For instance, steel structural including P.S. tanks are estimated to have secured Rs. 24.5 million through their export in 1971-72. The export earning of transmission line towers and poles was estimated according to the Engineering Export Promotion Council, Calcutta at Rs. 37.6 million in the same year. The export value of air compressors and parts was of the order of Rs. 4.5 miilion. Excavators and parts netted nearly Rs. 0.2 million. Road tractors were also active in the export trade. Power cranes brought in over Rs. 1.5 million. Floating cranes also figured in the export list. Among the fabricated steel structurals exported, rolling shutters steel bridges, steel slotters and P.S. tanks were prominent. Mostly, the West Asian and South East Asian countries constitute the significant buyers of the structurals. Iran, Thailand, Libya, Mozambique and Kuwait were the important buyers of transmission line towers and poles; Arab Republic of Egypt, Afghanistan and Uganda were the major recipients of cement mixers and small conveyors; A.R.E. Greece, Netherlands, Iran, Philippines, Nigeria, and Hong Kong were among the buyers of air compressors and parts. ☐

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VISCOSE TYRE RAYON YARN ON EXPORT FRONT

India's export trade of synthetic and regenerated fibres was valued at over Rs. 17 million in 1971-72. Of this, yarn and thread of regenerated fibres fetched about Rs. 14.7 million. Viscose rayon tyre yarn alone brought in a foreign exchange value of Rs. 11.4 million (1.6 million kg.). United Kingdom absorbed worth over Rs. 5 million of the tyre cord, followed by Netherlands (Rs. 2.2 million), Federal Republic of Germany (Rs. 1.4 million) and Austria (Rs. 1.14 million). France and German Democratic Republic were among the other importers. Viscose filament rayon and viscose rayon spun yarn were among the other regenerated fibre varieties exported. Varieties of yarn and thread of synthetic fibres, such as polymade filament yarn, polyester filament yarn, polymade spun yarn and PVA spun yarn are also active on export front.

M/s. Century Rayon, 'Industry House', 159, Churchgate Reclamation, Bombay-20 (BR) is a prominent exporter of viscose tyre yarn. In the three year period ending 1971-72, the firm's average annual export performance was of the order of Rs. 8.9 million. The company's contribution to the export trade is noteworthy in that they have taken lead in placing India's position in the export map for rayon tyre cord. Till recently, the country was dependent on imports of man-made filament and yarn for its thriving weaving industry. Today, the product manufactured in India finds ready acceptance among renowned tyre manufacturers in advanced countries.

The Bombay firm is the foremost manufacturer of rayon tyre cord in India. They meet the best portion of the product's requirements of major tyre manufacturing companies in India including M/s. Ceat, M/s. Dunlop, M/s. Fire-Stone, M/s. Goodyear, M/s. Madras Rubber Factory; M/s. Inchek Tyres and M/s. Premier Tyres. Their satisfactory performance on the home front encouraged them to seek overseas market outlets. From a meagre Rs. 58,000 of export value in 1968, they have now been able to penetrate several new markets such as the U.K., Austria, Italy, Netherlands, Poland, New Zealand, Japan and Arab Republic of Egypt.

To sustain their export progress, the firm has placed emphasis on quality, packaging and timely shipments. That their product has the precision which receives the approval of overseas buyers is evident from the continuous string of repeat export orders received and successfully executed by them. Their export packaging has been standardized.

Starting with the production of 5 tonnes per day in 1965, the firm today produces about 30 tonnes per day of rayon filament yarn. The share of their exports in the overall annual production was nearly 21 per cent in 1971. Additionally, they supply about 10 per cent of their production to exporters of the art silk fabrics from India.

COTTON MUSLIN TO WEST EUROPE

India's exports of cotton manufactures (excluding yarn, thread and clothing) amounted to Rs. 1000.43 million in 1971-72. Mill-made piece goods constituted the principal category which earned Rs. 674.68 million, accounting for more than 67 per cent of the total value. U.S.A., U.K., U.S.S.R., Australia, France, Federal Republic of Germany, Canada, Nepal and Sudan were the prominent destinations.

The made-up articles of cotton was the next best area of export earning which netted Rs. 186.75 million in foreign exchange. The important purchasing countries included U.K., U.S.A., Nigeria, Muscat, Kenya, Sudan, Federal Republic of Germany, Denmark, Australia, Zambia, Sweden, U.S.S.R., Canada, New Zealand and Rumania.

Handloom piecegoods was yet another category active in export trade. The export value of this category amounted to Rs. 99.54 million. U. K., Nigeria U.S.A., Sweden, France, Singapore, Federal Republic of Germany, Denmark, Nepal, and Japan were the important buying countries.

In addition to these principal categories, the foreign exchange earning of other categories was: other woven cotton fabrics (excluding narrow or special fabrics) Rs. 11.06 million; special fabrics of cotton and related products Rs. 10.38 million; tule lace embriodery ribbon trimmings and other small wares of cotton Rs. 9.07 million and floor coverings, tapestries etc. of cotton Rs. 8.96 million.

During the first six months of 1972 (January-June 1972), the exports of mill-made cotton textiles were of the order of Rs. 655.6 million as compared to Rs. 510 million in the corresponding period of the preceding year and Rs. 583 million in the same period of 1970. Not only the value of exports but even the average unit value realisation has improved.

Recently, M/s. Shree Ram Mills, Ferguson Road, Bombay-30, one of the firms engaged in the manufacture of cotton textiles, have been able to secure export orders worth Rs. 1.6 million for the supply of fine cotton muslin to West European markets. The orders are obtained by the firm through M/s. Batliboi, Wavell House, Graham Road, Bombay.

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M/s. Shree Ram Mills is already established in overseas markets as an exporter of a wide range of textile items. Their textile products have already reached a large number of countries in the world including the developed countries such as U.K., U.S.S.R. and East European countries. Their BOFAN embriodered materials and full voils are popular in the West Asian and African markets. The Bombay firm's range of products includes 'Saccha Nilam', Velvet dhoties, cotton and terrycotton suiting and shirtings, 2 x 2 full voils, organdie and tracing cloth for specialised industrial purposes.

The installed capacity of India's cotton textile industry is of the order of 18.36 million spindles and 208,000 looms. There are 684 cotton textile mills in the country, comprising 394 spinning and 200 composite mills.

The textile mill industry produced 3957 million metres of cloth in 1971. Additionally, the decentralised sector produced cotton fabrics to the tune of 3400 million metres in the year. Thus the total output of cotton cloth was 7356 million metres.

SWITCHGEARS TO INDONESIA

India offers a wide range of switchgear products to world markets. The overseas demand for India-made switchgears and electrical power machinery amounted to Rs. 47.48 million in 1971-72 as against Rs. 44.68 million in the preceding year. During the year, ARE, Singapore, Federal Republic of Germany, Tanzania, Sudan, Nigeria, Sri Lanka, Malaysia, Thailand, Dubai, Indonesia, Australia, Burma were the prominent destinations.

Indian firms engaged in the manufacture of these items have developed such a manufacturing skill and expertise that their products have been able to bag export orders even in the face of stiff international competition. Recently, M/s. Projects and Equipment Corporation (PEC), New Delhi won a global tender for the supply of low tension switchgears to Indonesia, valued at Rs. 1.5 million against stiff competition from advanced countries such as Japan and the Federal Republic of Germany. According to the terms of agreement, the supply of these switchgears is to be completed by September 1973. Besides this export order, PEC is also exploring possibilities to set up about 3 textile mills in Turkey.

Among the large number of export items in the category include static convertors, rectifiers and rectifying apparatus, oil circuit breakers for use above 660 V, oil circuit breakers and oil switches of rating 10 amps or below for use of 660 V or below, oil circuit breakers and oil switches of rating over 10 amps for use at 660 V or below, motor starters for AC motors running at constant speed including reversing starters at 660 V or below, motor starters for AC motor running at constant speed at above 660 V, motor control gears and motor starters for DC motors, switch fuse units of switch rating up to 15 amps, rewireable switch fuse units of switch rating about 15 amps high rupturing capacity or rewirable, fuses rewireable, fuses rupturable capacity, fuse gear, relays, switch board and control panels switches of plastics, switches of other materials, control and switchgears, lightening arresters, parts and accessories of switchgears, power capacities (½ KVA and above), electrolytic condenser for power excluding switchgear, other electrolytic condensers, electrolytic condenser parts and telephone and wireless condensers. Among these, switchboards and control panels, oil circuit breakers and oil swiches of rating 10 amps or below for use of 660 V or below, motor starters, motor control gears switches of plastics and other materials and swichgear parts and accessories are the prominent items which have wide spread demand abroad.

In the organised sector, the swichgear industry's total production was of the order of Rs. 451 million in 1971 as against Rs. 398 million in 1970. In 1971, there were 48 units engaged in the manufacture of switchgear and control gear as against 35 units in 1970. An additional capacity of 102,000 numbers has since been licensed. The industry has even undertaken the production of power line carrier equipment and thyristorised drives in the recent years. Besides, the schemes for the manufacture of high voltage HRC fuses indigenously have been approved. The industry is now turning out LT switchgears upto 400 amps and HT switchgears of 220 KV. The possibilities for manufacturing switchgears of 400 KV within the licences already issued are being explored progressively.

Thyristors were taken up for production for the first time in 1971. Rectifiers, silicon diodes upto 500 amps and capacitors of all types (including power capacitors for HV systems) are currently being produced by the industry.

MEDICINAL AND PHARMACEUTICAL PRODUCTS IN EXPORT TRADE

A broad range of medicinal and pharmaceutical products from India are finding their way in overseas markets. Their export earning improved from Rs. 84.65 million in 1970-71 to Rs. 87 million in 1971-72. During the first four months of the current year, the export value of these products was about Rs. 21.80 million.

Contributing to the export effort, one of the manufacturers in the line, M/s. Unichem Laboratories Ltd., Prabhat Estate, Swami Vivekanand Road, Jogeshwari (West), Bombay, were able to raise their exports to Rs. 2.35 million in the year ending September 1972 as compared to Rs. 2 million in the previous year. The company has plans for substantial expansion of its activities, both at Bombay and Ghaziabad. Its protein division at Ghaziabad is reported to have already achieved sizeable increase in production during the year.

There are over 2200 units engaged in the manufacture of a variety, of drugs and pharmaceuticals in India. Of these, nearly 100 units are in the organised sector. The total value of drugs and pharmaceuticals produced in the organised sector was estimated at Rs. 3000 million during 1971 as against production value estimated at Rs. 2500 million during 1970.

EXPORT DIVERSIFICATION OF A BOMBAY FIRM

An important facet of development among modern Indian firms relates to diversification of their export range by undertaking to organize the overseas supply of sister concerns. The export performance effected in recent years by M/s. Batliboi and Company Private Limited, Forbes Street, Bombay, is an example of this trend. The firm has emerged as an important source of supply for a broad range of products including chemicals, consumer products, machine tools, air conditioning systems, textiles and power plant equipment. They are also undertaking projects for humidification of air conditioning systems for which they prepare the designs that are acceptable to the exacting customers at home and abroad as well as undertake the fabrication and supply of the equipment. In view of the fact that the labour in India is less inexpensive than those in many countries abroad, the company arranges the erection and commissioning of the equipment directly supplied by their foreign clients to West Asian and other markets. The Bombay firm has the facility of collaboration with renowned European, American and Japanese manufacturers.

Among the successful export orders netted by M/s. Batliboi, a recent example relates to the order worth Rs. 1.6 million for the textiles made by M/s. Sriram Mills. Indeed the Bombay firm can undertake the export of a surprising range of products from fruit juices to textiles, engineering products and air conditioning equipment and to several markets from Bahrein to Budapest.

Of the products directly manufactured and marketed by the Bombay firm the prominent are electronic instruments, hydraulic power operated machines, high precision machine tools like fast taps and heat engineering products such as water heaters, electric toasters, kettle elements electric irons and geysers.

PARLE BISCUITS SCORE AGAIN

M/s. Parle Products Private Ltd., Annie Besant Road, Bombay had the distinction of being the first Indian food company to win gold medals at Brussels for their Monaco and Cheeslings biscuits in 1971. In 1972, Parle Gluco, the large selling biscuit from India, got the 1972 Monde Selection Award for excellence in taste, packaging, hygiene and purity of ingredients.

For Parle, the World Selection Awards mean international recognition of quality and taste. The latest award establishes once again the fact that India-made biscuits are the world's best.

Exports of biscuits from India amounted to nearly 1202 tonnes, valued at Rs. 4.6 million during the fiscal year 1971-72. The major importers were the Gulf Ports, Ethiopia, Hong Kong, Nepal, Nigeria, Peoples Republic of South Yemen, Seychelles and Thailand. Biscuits were also exported to Afghanistan, Australia, Federal Republic of Germany, Italy, Kuwait, Malaysia, Mauritius, Singapore, Somalia, Sweden and U.K.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT POSITION OF ENGINEERING PRODUCTS

The first three quarters of 1972-73 witnessed a five per cent increase in India's export trade of engineering goods as compared to the same period in 1971-72. In the period April-December 1972, the export value of these goods was estimated at Rs. 963.6 million as against Rs. 917.2 million. The estimate made by the Engineering Export Promotion Council, Calcutta, is exclusive of land route exports and exports from minor ports. During the entire year 1971-72, the Council estimated the engineering exports at Rs. 1260.43 million; in 1970-71, the export value was Rs. 1166 million.

Towards the five per cent growth rate in the first three quarters of 1972-73, the major products that contributed were electrical wires and cables, bicycles and parts, M. S. pipes, tubes and fittings, handtools and small tools, diesel engines and parts, transmission line towers and poles, structural fabrications, industrial machinery, E.P.N.S. ware, electric fans and parts and builders hardware.

Notwithstanding a marginal fall in its export value, auto and auto parts continued to lead the list of exports in the engineering line at Rs. 105 million in the first three quarters of 1972 as against Rs. 109 million in the same period of 1971-72. The value fetched by electric wires and cables was Rs. 94.15 million against Rs. 80.60 million. The group of bicycles and parts revealed a 25 per cent improvement at Rs. 77.86 million as compared to Rs. 62.30 million. Next in importance was M. S. pipes, tubes and fittings, having secured Rs. 61 million as against Rs. 54 million. The export value of handtools and small tools rose from Rs. 42.6 million to Rs. 59 million. In respect of diesel engines and parts, a near doubling of exports took place at over Rs. 43 million from about Rs. 22 million. A 62 per cent increase was registered in respect of transmission line towers and poles and their export value touched Rs. 41 million mark as against Rs. 25 million.

Among industrial machinery items, the group of paper, cement and chemical machinery were exported by 85 per cent more to fetch Rs. 18.5 million as compared to only Rs. 10 million in the earlier comparable period. Sugar mill machinery was exported to the tune of Rs. 10.5 million against Rs. 7.7 million. Oil mill machinery was another area of export progress and its exports totalled Rs. 2.7 million against Rs. 2 million. Other industrial machinery including boilers and excavators also improved from Rs. 14.7 million to Rs. 20.3 million. There was, however, a fall in respect of export trade in jute, textile and knitting machinery, office machinery and tea machinery.

E.P.N.S. ware presented another area of export expansion. Its foreign exchange earnings rose by 60 per cent to the level of Rs. 14.7 million as against Rs. 8.9 million. Electric fans and parts were also sought more by the world markets at Rs. 14.3 million against Rs. 12 million.

Among the other products that were responsible for the export growth in the first three quarters of 1972-73 were oil lamps and stoves, air conditioners and refrigerators, water coolers and ice machinery, water fittings and sanitary fittings, bright steel bars and shaftings, scientific and surgical instruments, aluminium utensils and capsules, electric lamps and fluorescent tubes, hoists and lifting machines including cranes, electrodes and welding equipment, air compressors, agricultural implements and machinery, stainless steel utensils, brass and copper utensils, wood screws, cutlery, abrasives and grinding wheels, public address equipment, steel trunks and ball and roller bearings and crown corks.

SUSTAINED GROWTH IN EXPORTS OF ELECTRICAL EQUIPMENT

Recent months have proved that the world markets are revealing keen interest in India's electrical machinery, apparatus and appliances. Export of these products has been on uptrend year after year; not only more sums of foreign exchange are being earned but new markets are established. In the first five months of 1972-73 (April-July 1972), the export value of this group of products earned Rs. 73 million against Rs. 67 million in the same period of 1971-72. Almost all categories of export possibility in this group have recorded increases in export value. Electrical power machinery and switchgears, for instance, secured Rs. 17.53 million as compared with Rs. 15.7 million in the comparable period of 1971-72. The equipment for distributing electricity netted Rs. 20.4 million against a little less than Rs. 19 million. The offtake of domestic electrical equipment almost doubled to the level of Rs. 13.5 million as compared with Rs. 6.9 million. Other electrical machinery and apparatus also witnessed rise at Rs. 13.82 million against Rs. 13.10 million. The group of telecommunication apparatus was, however, an exception as it brought in only Rs. 8 million as compared to Rs. 12.4 million.

The improvement in the export earning of electrical power machinery and switchgears was mainly the result of the growth in the offtake by South East and West Asian markets of a wide range of transformers, circuit breakers, control and switchgears and accessories. Expanded trade for cables and wires as also electrical insulating equipment was responsible for the rise in the export value of the equipment for distributing electricity. Of the domestic electric equipment, electric fans played an important role in boosting the external trade.

In 1970-71, the export earning of electrical machinery, apparatus and appliances was of the order of Rs. 106.8 million while in the following year it was Rs. 186.7 million.

INDO-GREEK TRADE AGREEMENT SIGNED

The Governments of India and Greece have recently concluded a fresh Trade Agreement providing for enhanced opportunities for trade exchanges. The Agreement, which is in consonance with the provision of General Agreement on Tariffs and Trade (GATT), provides for the grant of Most Favoured Nation Treatment to each other in respect of payment remittances, transfer of funds, operation of commercial establishments and shipping. It also provides for stipulating the mutual trade in freely convertible currency.

Under the Agreement, India is to export 69 items to Greece including food preparations, beverages, spices, lac, essential oils, tobacco, jute manufactures, coir goods and textiles. In the non-traditional sector, the Agreement provides for India's exports of a broad range of products such as cement, chemicals and pharmaceuticals, plastics, rubber manufactures, iron and steel products, copper manufactures, aluminium ingots, machine and hand tools, internal combustion diesel engines, agricultural machinery, textile machinery, electrical machinery, automobile products, instrumentation, telecommunication equipment and cinema projecting machines.

In turn, India is to import 44 specific items from Greece under the Agreement including steel sheets, chemical fertilizers, electrical machinery, photographic films and certain metal wares.

The two-way trade in 1971-72 was of the order of Rs. 14.75 million. Of this, the value of Indian exports stood at Rs. 14.50 million in the year. The prominent groups of exports to Greece were handtools, industrial machinery, non-electrical appliances and jute manufactures. Natural gums and resins as well as lac were the prominent commodities imported, from Greece by India in the same year.

BOARD OF TRADE MEETS

Addressing the Board of Trade recently, India's Foreign Trade Minister stated that the rate of growth in the conntry's export trade would not be sustained unless vital sectors of non-traditional industry did not contribute their fullest mite. He said that an element of compulsion might have to be introduced within the non-traditional sector for individual units or for items whose capacity to export was established.

In the first seven months of 1972-73, the export performance registered an increase of Rs. 1930 million or about 22 per cent over exports in the corresponding period of 1971-72. During this period (Aprial-October 1972), the export value was estimated at Rs. 10702.70 million while the import bill was Rs. 9961.90 million. In the corresponding period of 1971-72, the export value was Rs. 8772.60 million while imports were of the order of Rs. 1043.20 million. The volume of exports even during these seven months accounted for nearly two-thirds of the country's total export trade in the entire year of 1971-72. The export growth coupled with a decline in imports has helped to secure surplus balance of Rs. 740 million as against a deficit of Rs. 166 million and odd for the corresponding period in 1971-72.

The Minister announced that Tobacco Marketing Board would be created soon for providing an institutional frame-work for systematic development of both production and marketing of virginia flue cured tobacco, the main variety being presently exported by India. In respect of jute manufactures, the policy of the Government of India would be to augment exports and to ensure fair and equitable returns in investments made by jute growers. Towards this end, the Government's intention was to strengthen research and development organisations connected with the jute industry. He stated that jute producing countries particularly India, Bangladesh, Nepal and Thailand must effectively cooperate to evolve a common jute strategy.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

IRON ORE BOARD INAUGURATED

India's Iron Ore Board, an autonomous organisation, has been recently inaugurated to ensure proper regulation, conservation and development of the country's iron ore deposits. The Board is to help the iron ore industry to develop on modern lines based on sound economic principles as also to effectively co-ordinate the activities of India's steel plants and mining agencies both in the private and public sectors.

The Board is to advise the Government on all aspects of iron ore utilisation including pelletisation of fines, blue dust and of lower grades. It is to ensure a balanced development of the ore deposits in relation to export potential as well as requirements of the indigenous steel industry.

Iron ore is India's largest mineral in terms of reserves next to coal, with an estimated reserve of 10,000 tonnes, exclusive of low grade deposits which are considered to be substantial. India ranks seventh among the iron ore producing countries next to U.S.S.R., Canada, U.S.A., Bolivia, Brazil and China. Production-wise, India is ninth among the nations following U.S.S.R., U.S.A., France, Australia, China, Canada, Sweden and Brazil. The ore is one of the largest single export earners, contributing more than two-thirds of the country's foreign exchange earnings in the mineral group. Its export value was of the order of Rs. 1047 million (about 20 million tonnes) in 1971-72. The Japanese market was the major buyer at Rs. 816 million (16.3 million tonnes), followed by Rumania at Rs. 62 million (1 million tonnes), Czechoslovakia at Rs. 38 million (0.55 million tonnes), Poland at Rs. 24 million (0.36 million tonnes) and Yugoslavia at Rs. 13.5 million (about 0.2 million tonnes) and Bulgaria at Rs. 11.8 million (0.18 million tonnes). In the year, iron ore concentrates were mainly exported to Japan and Poland at a value of Rs. 49 million.

COAL MINES TAKEN OVER

The management of non-coking coal mines have been taken over by the Government of India. In a Presidential Ordinance announced recently, 464 private non-coking coal mines have become the responsibility of the Government. Earlier, 214 coking coal mines were already nationalised.

The privately-owned non-coking coal industry did not have adequate resources to develop the mines to meet the Fifth Five-Year Plan production target of 105 million tonnes against the current production of 55 million tonnes.

The non-coking coal mines that are now taken over are located in West Bengal, Bihar, Assam Madhya Pradesh and Maharashtra. The management of these mines by a single agency is aimed at enabling optimum utilisation of wagons, speedy mechanical loading movement of coal in block rakes and better turn round of wagons.

IMPORT SUBSTITUTION AWARD FOR INTERNAL GRINDING MACHINERY

In view of the drain on foreign exchange for the import of internal grinding machines, an Indian firm developed a fully indigenous hydraulic control machine. This endeavour of the firm, the first of its type in India, received an award for successful import substitution by the Inventions Promotion Board (1971). The foreign exchange saved on account of this development is estimated at Rs. 2.4 million every year.

The firm, M/s. Raja Bahadur Motilal Poona Mills Ltd., Poona, is one of the leading textile units engaged in the textiles export trade. Besides the manufacture of textiles, which have been supplied by the firm to West European markets in sizeable quantities, the company has diversified its production structure to cover drafting machine, quick change chucks, collets, unit toolings and reducing sleeves. The hydraulically controlled internal grinding machines developed by the firm, one of the latest additions to their manufacturing range, have been put to intensive tests before their manufacture was taken up on commercial scale.

The firm also succeeded in developing the manufacture of medium horse power tractors suitable for India's farming conditions. The tractors developed by them are fully based on indigenous knowhow and material as there is no involvement of either foreign collaboration or imports of components or capital goods.

JOINT SECTOR PRINCIPLE APPROVED

A proposal for joint collaboration between India's public and private sectors for industrial progress has been recently approved by the Government in principle, it is learnt. The proposal is in view of the possibilities of drawing managerial expertise and talent already available in the private sector for a more effective functioning of the State-owned industrial units in the country.

The list of industries earmarked for the core sector of the economy is also to be expanded so that participation by larger private industrial houses could be made possible in this area of industrial activity; fertilizers and chemicals are expected to be among the new important items to be brought under the core sector. The core industries sector is essentially capital intensive in nature and involves long gestation period and sophisticated technology.

Although the joint sector principle was mooted a few years ago, it is for the first time now that it has been agreed in principle. The concept is soon to be spelt out in concrete form and dovetailed with the Nation's industrial policy.

NICKEL PLANT

A Rs. 320 million nickel plant has recently been inaugurated at Kansa in the Orissa State. The plant in the public sector (Sukinda Nickel Project) is estimated to save considerable amount of foreign exchange per annum. The first stage of the project envisages a production of 690,000 tonnes of nickel ore, yielding an annual production of nickel at 4800 tonnes, 200 tonnes of cobalt and about 17000 tonnes of ammonium sulphate.

The requirement of raw material viz. nickel ore, is to be available in the same region. The Geological Survery of India estimated nickel reserves in the Sukinda area at 15 million tonnes.

In 1971-72, India imported the nickel metal to the tune of Rs. 63.6 million. In the previous year, the import value was far more at Rs. 124.14 million. The major sources of import have been Canada, U.K., Finland and Netherlands.

DIAMOND MINING

Diamonds worth about Rs. 20 million were obtained from diamond mines at Panna (Madhya Pradesh) during the last three years. These stones totalling 112,160 in number are reported to weigh 56347 carats.

During 1971-72, the output of these stones from Panna mines was 20803 carats valued Rs. 8.6 million. The diamond deposits at the Panna mines are estimated at about 3 million carats. The development of mining is looked after exclusively by the National Minerals Development Corporation.

Diamond cutting industry in the country had its origin in Panna and Varanasi. Today, Surat and Navsari in Gujarat are famous for cutting and polishing diamonds in India. The industry employing 25,000 workmen, offers a large variety of cut and polished diamonds in various shapes and sizes. The villandi cut is a speciality of the Varanasi cutters. The lapidaries in Surat, Navsari and Bombay produce Single cuts, Brilliant cuts, Baguettia and Marquise and also process other fancy shapes.

BATTERY DRIVEN CAR DEVELOPED

A petrol-less battery driven car has recently been developed by the College of Military Engineering, Poona, indicating an era of anti–pollution smokeless automobiles in the country.

The smokeless electric car is an improvised structure based on old chassis of Austin A-40 model, incorporating an electric motor with electronic control in lieu of engine assembly and gear box.

The other main features of the car are : fibreglass doors and mudguards; simple driving control system; least maintenance cost and all up weight of only 1.2 tonnes including battery weighing four hundred kilograms.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

CADMIUM SULPHIDE PHOTO-CONDUCTIVE CELL

Cadmium sulphide photo-conductive cell, a light sensitive device which is used for detection and measurement of light, has been developed by National Physical Laboratory (NPL), New Delhi.

In the process, Cadmium Sulphide Powder is doped with small quantities of suitable chemicals. The powder is then mixed with an organic binder and coated on glass or ceramic substrate. Several hundred substrates can be coated at a time by screen printing technique. After the coating has dried, it is sintered at 500-700° C in a furnace with an inert atomosphere. Contacts are applied to the Cadmium Sulphide with the help of silver paint. The electrodes are taken out by soldering two wires to the substrates. The piece thus prepared can by encapsulated in a plastic box or in an evacuated glass envelope.

The characteristics of the cells developed by NPL are: maximum sensitivity (for visible light); light to dark current ratio (about 10°); rise time (in the microseconds); decay time (in miliseconds) and power dissipation (upto 300 mw).

Laboratory uses of the developed cells include light measuring instruments like luxmeters and in photo-colorimeter, turbidity meters and automatic temperature controllers. Industrial uses of the developed cells include liquid level controllers, industrial safety devices and device to indicate break in conveyor belt processes. The commeacial uses of the cells include camera exposure meters, in twilight witches and in automatic door openers. If devices of various types are made for obove uses, the demand for these cells could be of the order of 100,000 per year.

The main advantages of the cells developed by NPL are that these are inexpensive and will be able to compete in the market with selenium cells, cadmium sulphide single crystal cells and photo-diodes. The cells are at least 100 times more sensitive than the cells of other materials. These are sensitive to much lower light intensities and operate over wider temperature range. Compared to the cadmium sulphide single crystal cells, these cells are much inexpensive and can handle larger power. They do not need any amplifier circuit to operate relays.

The main raw material required in the process is photo-conductivity grade cadmium sulphide powder. This is available from NPL. The main items of equipment required are controlled atomosphere electric furnace, screeen printing equipment, encapsultaing equipment, testing equipment. All these are indigenously available.

CELLULOSE POWDER DEVELOPED

National Chemical Laboratory (NCL), Poona, has successfully carried out investigations and has developed a process for the manufacture of cellulose powder which is used in chromatographic work for the separation of rare earths and other organic compounds, starting from rayon grade pulp or cotton linters.

In the process, the pulp is thus hydrolysed with dilute acid, and the residue obtained is filtered, washed, dried and converted to a fine powder. The work by NCL has been conducted on 1 kg. per batch scale. The cellulose powder prepared by them has been found useful and can be compared well with the imported material.

Cellulose powder can also find other applications such as coatings material per electrodes, filter medium and or as filter aids. The exact figures for requirements of the product in the country for various applications are not available. At present, there is no production of chromatographic grade cellulose powder indigenously and it is, therefore, presumed that the entire requirement is met through imports.

The principal raw materials required for the manufacture of cellulose powder are rayon grade pulp, sulphuric acid and ammonia.

The major items of plant and machinery required in the process are lead lined reactor with stirrer and motor, washing vessel, centrifuge, drier grinder, centrifugal pump and boiler. All these are indigenously available or can be locally fabricated.

INDUSTRIAL MACHINERY
AN OUTLOOK

In the mosaic of industrial efforts made in modern India, engineering sector occupies prime position. The spectrum of industrial machinery particularly deserves close attention as it is this area of production and diversification that has placed the economy on the industrial map of the world. Over the years of planning, an unbelieveable range of industrial machinery has come to be firmly established in the country placing emphasis, at once, on import substitution and indigenisation as also product development and export promotion. It is perhaps not an exaggeration to say that most of the known industrial machinery items are being produced in sizeable quantities in India, absorbing latest techniques of design and manufacture. A net importer till the other day, the economy stands out as a prominent exporter even to sophisticated markets abroad in view of the competitive characteristics of its produce, in terms of quality, pricing and delivery conditions. Indeed, the initiative of private entrepreneurs and collaboration with reputed manufacturers of the world have made the product development and diversification possible but the establishment of large-sized units in the public sector has definitely supplemented the country's total endeavour towards modernisation and industrialisation,

TEXTILE MACHINERY

Among the broad categories of industrial machinery that have been well established in India, textile machinery is an important example. A traditional producer of textiles, the Indian industry found it inescapable to adapt itself to the varying and exacting demand pattern abroad and as such has had to modernise the basic industry for producing *cotton textile machinery* and stores. From modest beginnings, this sector has traversed a long distance in terms of installed capacity and annual production rates. The capacity available presently is of the order of Rs. 450 million per year; the licensed capacity is still more, at an order of Rs. 670 million. In terms of actual production too, the sector has not lagged behind; it was only about Rs. 150.70 million in 1968 and over Rs. 350 million in 1971. What is of particular significance is that the textile machinery industry continues to add every year new dimensions to its product range. Beginning from blow-room lines to carding engines and from high speed draw frames, fly frames and ring frames to doublers, the industry truns out the complete requirements of the preparatory departments and spinning departments of the textile mills. It also manufactures pirn winders and cone winders, sizing machines and power looms. Automatic looms of various designs constitute a part of the production programme of the industry. Almost all the wet processing machines required by the mills, such as continuous and semi-continuous bleaching plants, open width as well as rope form, singeing machines, dyeing equipment, padders, open width washing machines, finishing equipment, baking machines, stenters, printing machines, and calendars are but a few examples. In brief, the industry today is capable of manufacturing the entire range of spinning, weaving and processing machines, even including combers whose production has started recently. Some of the machinery manufacturers have collaboration arrangements with renowned machine makers abroad and they thus have the facility of access to most modern techniques.

India's textile machinery, in view of their competitive position, are being increasingly imported by several markets, far and near. The export trade in this field fetched as much as Rs. 49 million in 1971-72. The major variety supplied abroad relates to spinning ring frames and the leading purchasers include Arab Republic of Egypt, Malaysia, Indonesia, Poland, Iraq, Sri Lanka and U.K. Non-Cotton textile fibre processing machines, cotton spinning and weaving machines and non-cotton textile fibre processing machines have also been finding their way in export markets in increasing quantities. Knitting machines, textile driving machines and a host of accessories of textile machinery are equally active on export front.

Very soon some sophisticated departments of these machinery including fully automatic single spindle pirn winding machines, fully automatic warp winding machines, super speed warping machines, automatic knotting machines (warp tying machines), auto looms for canvas and corduroy, jet dyeing machines, automatic rotary and screen printing machines and uster evenness tester are to be produced indigenously in larger quantities.

The *jute mill industry* is another important textile machinery which is well established. As against the installed capacity of 12800 numbers per annum, this sector is in a position to produce practically the entire range of items including cards and roll formers, roll winders, cop winders, broad looms, spinnining frames, carpet backing looms, bar types, con winders, spinning and drawing frames. The units engaged in this line of manufacture have a licensed capacity of Rs. 223 million per year and their production during 1971 was estimated at Rs. 32 million. The total requirements of jute mill machinery estimated in the Fourth Plan period (1969-70 to 1973-74) have been assessed at Rs. 403 million over the plan period or Rs. 80.6 million per year. During this period, indigenous availability is estimated at Rs. 345 million worth and the rest is to be imported. The machinery to be imported is in respect of first drawing (coarse), automatic cop winders and sewing machines for which indigenous manufacturing facilities will soon start. A recent development relates to sophisticated types of production such as cop winders, which have a high export potential. A wide string of new processes is being developed for exploring new end-uses and product variations of the jute fibre and new departments of machinery are being developed such as for bleaching, dyeing and printing of jute cloth for furnishing and decorative purposes.

Jute mill machinery was exported by India to the tune of about Rs. 0.4 million, among others, to Iraq, Arab Republic of Egypt, Kenya, Singapore and Poland, in 1971-72.

The *rayon and synthetic fibre industry* too has made impressive progress in recent years. In India, the industry started only recently and even to-day certain categories of machinery are still being imported. Nevertheless, two existing units engaged in the manufacture of rayon and synthetic fibre have made good start for the production of complete rayon plants and four more units are to soon go on production stream. In 1971, the production was at a level of Rs. 14.20 million. But the growth in demand for man-made fibres within the country as well as in the export markets is bound to speed up the rate of production. As the country can ill-afford to import technology and capital equipment at huge costs, Government have recently licensed additional capacity for the industry to the tune of Rs. 114 million per year for the production of its plant and machinery.

FARM MACHINERY

Next to textile machinery, the importance of farm machinery and equipment is no doubt appreciable in a basically agricultural economy like India. Production of *agricultural tractors* which started only in 1960-61 has risen sizeably over the years. The installed capacity for tractors by 1971 was of the order of 36,000 numbers per year. An additional capacity for 27,000 numbers was created during 1971. The actual production in 1971 stood at 16,643 numbers. The indigenous content in tractor manufacture today ranges from 80 to 90 per cent and only critical components like steaming assembly, hydraulic pumps and rear axle bearings are currently allowed to be imported. Apart from regular production some of the existing manufacturers have also assembled tractors imported in PKD form. The production on this account was 6,100 numbers in 1971. The output of tractors is expected to touch the figure of 45,000 numbers in 1972-73 and 57,000 numbers in 1973-74.

Licensed capacity of *power tillers* was 36,000 numbers in 1971. The output of *tractor mounted harvestors* began in 1970. The use of high-yielding varieties of seeds has in its wake necessitated the speeding up of the harvesting process and the harvesting machinery manufacturers in India are, therefore, gearing up to this situation. The production of self - propelled combined *harvestors* has also been taken up and reaper binders required in harvesting operations are to be produced soon. For *agricultural discs*, the installed capacity was 0.4 million numbers in 1971 and the production rate achieved by that year was 114,815 numbers. It is likely that a capacity at 1.2 million numbers of discs per year will be established in the near future.

The *power driven pumps* industry which had its beginning in the early 30's has grown substantially since then. Today, almost every kind of pump, starting from those required for laboratory applications to those used in major irrigation and power projects are being produced sufficiently. In 1971-72, the production of these pumps was in the neighbourhood of 238,460 numbers. Some of the existing units are also manufacturing specialised pumps required for petrochemical and fertilizer industries.

The *diesel engine* sector is yet another area of consistent expansion in recent years. In 1971, the production was nearly 82,750 numbers, exclusive of automation engines. In all, about 700 manufacturers are engaged in diesel engine production today for a variety of engines ranging from 3 h. p. to 800 h. p. The types of engines turned out cover both horizontal and vertical and water and air-cooled, slow and high-speed varieties and for various power applications such as locomotives, trucks and tractors, industrial, irrigation and marine. The installed capacity of diesel engines in the organized sector was of the order of 184,725 numbers in 1971. The total annual capacity both in organized and small scale sectors is estimated at 250,000 numbers per annum. The types of engines programmed for manufacture in the near future include single cylinder horizontal engines and vertical engines from 3.5 to 50 h. p. and 3 to 12 h. p. respectively as well as multi-cylinder vertical engines ranging from 16 to 1800 h.p.

The installed capacity for heavy duty diesel engines required for both industrial and marine applications stands at 1440 numbers per year. In 1971, nearly 900 numbers valued at Rs. 62 million were produced. The production capacity and range of the diesel engine industry is such that the import of piston engines, particularly marine engines up to 320 h. p. is not considered necessary.

Additionally, a wide range of *other farm implements* are being produced in sizeable quantities and they include bed preparation implements like ploughs, harrows, rollers, cold crushers, and planters; sowing and planting equipment like seed-cum-fertilizer drills and planters; inter-cultivation equipment like cultivators, thinning and earthing equipment; plant protection equipment; agricultural and hand tools such as shovels, pick axes and garden tools. The small scale sector in the country manufactures a broad range of implements, such as ploughs, forks, hoes, earth augers, shovels, pickaxes, seed dressers and sickles.

Pesticide equipment is another area of agricultural machinery that has come to be produced in an established manner. Production of the equipment rose from Rs. 9 million in 1961 to over Rs. 34 million in 1971. In the organized sector, the installed capacity is of the order of Rs. 7.25 million.

The agricultural machinery and implements sector has contributed over Rs. 3.7 million by way of foreign exchange in 1971-72. Among the agricultural machinery and appliances for drilling and cultivating that were exported, rotary tillers, disc harrows, tractors, ploughs and parts were important. Also thrashing and sorting equipment and animal and hand drawn machinery have come to be exported in sizeable quantities. Poultry incubators made in India are also eagerly sought by the overseas importing community.

AGRICULTURAL PRODUCE MACHINERY

The implements for processing agricultural produce constitute a significant line of growth in the industrial machinery sector. The *sugar mill machinery* industry, for instance, has been fully established in India. Its manufacturers are in a position to supply complete sugar plants with capacities as high as 3500 tonnes of cane crushing per day from the stage of crushing of sugar cane to the stage of sugar refining. A quick review of the production pattern of this machinery-Rs. 1 million worth of equipment in 1951 and Rs. 164 million worth in 1971-denotes the rapid progress made. This industry has also achieved a high indigenous content; for a complete sugar plant of 1250/2000 tonnes of crushing capacity per day, the pack value of import content is about 8 per cent of the value of complete plant. The total licensed capacity today stands at Rs. 230 million and the installed capacity is of the order of Rs. 210 million (1971). The actual production rose from Rs. 124 million in 1969 to Rs. 146 million in 1970 and Rs. 164 million in 1971. Some of the indigenous manufacturers are in a position to supply diffusion plants both for sugar cane and beets. The contribution made by sugar mill machinery in the case of export trade is noteworthy. In 1971-72, the export value totalled Rs. 11 million. Sugar plant and mill machinery were mainly exported to Uganda, German Federal Republic, Iran, Sri Lanka and Kenya. Sugar cane crushers were supplied, among others, to Nigeria and Liberia. One of the sugar mill machinery units in the country has already exported a complete sugar plant to Malaysia.

Being one of the largest producers of tea, India is also a leading manufacturer of *tea processing machinery*. Being fully self-sufficient for all types of tea processing machinery, the industry has attained a high level of sophistication, both in regard to range and volume of production as also in terms of quality. It is now in a position to entertaining any large order for tea plant and machinery as also to export technical knowhow. The items manufactured indigenously cover a complete range of equipment comprising CTC machines, tea rollers, tea brakers, storage bins and weathering machines. With a total installed capacity at Rs. 25 million per annum, the units engaged in this line of manufacture produced as such as Rs. 12 million (1970). Over Rs 2.6 million worth of foreign exchange was secured by the tea machinery exports by India during 1971-72. The major markets were African countries including Kenya (Rs. 1.4 million), Mozambique, Tanzania and Uganda. Sri Lanka is another regular market.

The installed capacity for the manufacture of *tobacco processing plants* is about Rs. 3.6 million per annum. A wide range of equipment manufactured includes butts conditioning cylinder (stainless steel), tips conditioning cylinders; auto feeders, threshers, classifiers, recirculators, stem conditioning cylinders, lamira conditioning cylinders, steaming cylinders. cooling cylinders, air driers, recovery felts, hoppers, and conveyors. Green leaf threshing plants are being developed for manufacture. The actual production of tobacco processing equipment worked out to Rs. 4.3 million in 1971. The progress in this line of machinery is considered to be of importance for India because of its significant position in the world markets as a major producer of tobacco.

The *rubber machinery* industry has target of Rs. 120 million output by 1973-74. The licensed capacity is of the order of Rs. 6 million per annum. Actual production was worth over Rs. 2 million in 1971. A highly capital intensive industry, it is considered to be core sector for development. There are active plans to substantially increase the available capacity by envisaging collaboration with well-known foreign manufacturers in order to enable the domestic units to take up highly sophisticated items like banbury mixers, automatic curing presses for tyres and tubes and drum building machines. This machinery sector has also made its contribution to the export trade. The major importing countries are Nigeria, Japan and U.K.

Dairy Machinery industry is an example where foreign collaboration from Denmark, Sweden and U. K. continued. The total capacity available in India is of the order of Rs. 26 million per year. The domestic industry is today capable of manufacturing most types of dairy equipment including sophisticated machinery like spray drying plants, automatic bottle filling and bottle washing machines, large capacity cream separators etc. The existing manufacturers have even reached a stage where they can offer complete know-how for design and engineer dairy plants of various sizes. The World Food Programme (Operation Food) has given an impetus to the growth of Dairy machinery industry in the country. The demand for these machinery is expected to grow to Rs. 60 million per year by 1973-74. While the existing units are gearing up to manufacture maximum possible, additional capacity is being planned to the extent of Rs. 82 million. In 1971, the output of the industry reached Rs. 35 million mark. The indigenous content in this line is of the order of 82 per cent; the import content was as much as 70 per cent in 1961-62.

In the export field, the dairy machinery was prominent in the supplies to Nepal and Philippines during 1971-72.

Till recently *Rice Milling* was effected in India through conventional type of machinery. For getting higher yields by reducing wastage of rice while milling, the production of modern rice mill machinery has been successfully taken up in the country. The installed capacity is of the order of Rs. 101 million per year. The value of the output was Rs. 19.00 million (1971). Besides modern rise milling machinery, the domestic industry has already taken up in a big way the production of dal (pulses) and flour mill machinery. The export trade in rice, dal and flour mill machinery is of the order of Rs. 1 million (1971-72). Sri Lanka, Nigeria and Iran were among the 30 importers.

The age old oil industry in India has now come to modernise its *oil extraction equipment*. The machinery is employed for extraction of oils from seeds, copra, and ground-nuts and other oil yielding seeds mostly used for edible purposes. The machinery for extraction of oils from the various types of seeds has been fully developed in India and the entire requirements are met from indigenous sources. With over Rs. 33 million worth of licensed capacity available, the items of oil mill machinery manufacture include oil expeller of different ranges and sizes, filter presses, rotary oil mills, copra cutters, disintegrators, decorticators, delinting machines, seed cleaners and hydrogenation plants. Some of the units engaged in this line of manufacture have already shown encouraging export performance in recent years. Some of them are even in a position to export technical know-how and enter into joint ventures with foreign firms. The export earning of this industry was only in the neighbourhood of Rs. 3.5 million during 1971-72. Sudan was the foremost importer at a value of Rs. 1.2 million. Indonesia, Tanzania, Kenya, Malaysia, Uganda and Sri Lanka also figured prominently among the importers.

MECHANICAL INDUSTRIAL MACHINERY

In the mechanical industrial machinery group, *cement machinery* industry has a high indigenous content. Its total licensed capacity is Rs. 260 million. The import content for a complete wet process cement plant of 600 tonnes per day capacity is of the order of about Rs. 1.2 million and that for a dry process cement plant of the same capacity is Rs. 1.9 million. The cement machinery manufacturers in the country are capable of producing dry process cement plants of 1000 tonnes per day capacity. Some of the existing units can even take up manufacture of shaft kiln plants, with a capacity ranging from 30 to 200 tonnes per day, based fully on indigenous knowhow. The output of cement machinery in 1971 totalled Rs. 32 million but it was as much as Rs. 98 million in 1969. While the shortfall in production was due to lack of orders, the 1969 figure would indicate the capacity for production. The target of output for 1973-74 has been placed at Rs. 190 million.

Some of the indigenous cement machinery manufacturers have already exported cement plants. In the export field cement mixers and vibrators have been fully active and in 1971-72 their foreign exchange earning was of the order of Rs. 3.4 million. The Arab Republic of Egypt was the outstanding importer, followed by Afghanistan, Uganda, Muscat, Kenya, and Kuwait. Additionally, asbestos cement plant and mill machinery was exported to the tune of Rs. 6 million, Kuwait being the foremost buyer. Thailand, Singapore, ARE and U.K. were the other importers.

Capacity had already been established sufficiently for the manufacture of *asbestos cement machinery*. The equipment for which the production is substantial, includes machinery for feeding, storage, crushing and mixing up to the final stage of the products, namely, plain asbestos cement pipes and pressure pipes. A capacity of about Rs. 28 million per annum has been licensed for the asbestos equipment.

The rapidly increasing demand for paper and paper-based packings has necessitated to plan expansion of the existing paper mills in India as also the establishment of new paper mills of larger capacity plants ranging upto 150 to 200 tonnes per day capacity. The present total annual licensed capacity is of the order of Rs. 114 million while the available installed capacity is approximately Rs. 66 million. It is appreciated that by 1973-74 the installed capacity should increase to Rs. 150 million and production to Rs. 135 million. Since 1963 the output of *pulp and paper machinery* rose four-fold - from Rs. 13.4 million in 1963 to Rs. 53.5 million in 1971. Active plans are under way for setting up additional capacity for the manufacture of integrated paper and pulp boards of 150 tonnes per day production capacity. Today the industry is capable of manufacturing complete large scale pulp and paper making plants. Interestingly, there has been a distinct downward trend in the import of machinery in this field. The machinery is fully active on export front also. Items including fourdrinier wire cloth are being supplied overseas including Sri Lanka, Hong Kong, Qatar, Arab Republic of Egypt, Greece, Sudan, Thailand, Australia, Bolivia and Rumania. The export value was of the order of Rs. 0.6 million (1970-71). Overseas supply of fourdrinier, and wire cloth is expected to increase further to West Asian and African countries in view of their production plans.

As against the target of Rs. 1000 million and Rs 800 million installed capacity and production respectively, the actual production capacity available and production effected by *printing machinery* were about Rs. 10 million and Rs. 4 million in 1971. Recently a number of schemes for the manufacture of various types of printing machinery such as cylinder printing machines, offset printing machines, rotary machines, and paper cutting machines have been approved by the Government of India. M/s. Hindustan Machine Tools Limited who have approved to manufacture cylinder printing machines, offset printing machines and paper cutting machines in collaboration with Italy deserve mention. The printing and book binding machinery made in India has already come to be sought by overseas markets in view of their quality and other considerations. In 1971-72, over Rs. 1.15 million worth of these machinery were supplied abroad. In the range of exports, lithographic plates, printing types, printing and proofs were prominent. While Sudan and Iraq were the major buyers of lithographic plates, Malaysia, Singapore, Sri Lanka and Kenya were among the buyers of printing types and German Democratic Republic, Nigeria, Malaysia and Sri Lanka were the leading importers of printing proofs. Rumania was yet another market for rolled compositions.

The *Chemical and Pharmaceutical machinery* industry has an annual licensed capacity of about Rs. 310 million spread over 59 units. In addition to these units in the private sector, there are three public sector projects licensed to manufacture different types of pressure vessels, and heat exchangers for a total annual capacity of 35,310 tonnes. The existing units could manufacture diverse types of plants, water treatment plants, solvent extraction plants, fatty acid plants, alcohol plant and a number of miscellaneous equipment such as pressure vessels and heat exchangers. There are plans to produce ultra-high pressure vessels of multi layer and forged type also. The design for high-pressure vessels required for ammonia and urea synthesis has also been undertaken. For the first time the manufacture of air receivers was started in a public sector unit in Allahabad during 1971. In view of the the developing tempo of nuclear power generation in the country, some of the chemical machinery manufacturers have even taken up the fabrication of certain nuclear equipment. Recently a firm has been licensed to manufacture garbage milling plant for the first time in India and another firm has been registered for the manufacture of liquid ammonia and crygogenic tanks required for the manufacture of fertilizers and chemicals.

The actual production in the industry has been going up sizeably year after year; it was of the order of Rs. 110 million in 1968 and Rs. 202 million by 1971.

OFFICE MACHINERY

Among office machines, data processing machines, comprising computer hardware such as punches, verifiers, sorters, collators, accounting machines, tabulators, interpreters, reproducers, gang punch, and calculators are being manufactured sufficiently. The total probuction of the data processing machine industry was in the neighbourhood of Rs. 41 million in 1971. The growth of computer industry in India is of particular significance. Even with its present stage of, development, the industry has acquired a good deal of technical knowhow and is saving and earning considerable foreign exchange. The machines have been exported to a large number of European and Far Eastern countries, Canada, U.S.A. and U.K. The export earning of all office machines including typewriters, calculating machines and accounting machines, statistical machines such as punches, verifiers and collators totalled Rs. 21.5 million in 1971-72. The major group exported was statistical machines whose foreign exchange income was of the order of Rs. 18.73 million in the same year. Interestingly, countries ltke France, German Federal Republic, Netherlands, U.K., New Zealand and U.S.A. figured prominently among the importers of these machines.

BUILDING MACHINERY

Building and construction equipment industry is one more line of dynamic activity in recent years in India. The *building and road construction machinery* is well established in the country today. For the produc-

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tion of a variety of machines such as concrete mixers, vibrators, hot mix plants, tar boilers, crushers and granulators, pre-stresed concrete equipment and pile driving equipment, this sector has a licensed capacity of about Rs. 100 million per annum. In 1971, the installed capacity was nearly Rs. 72 million and the production was over Rs. 15 million. Of the *earth moving machinery* and contstruction equipment, the important items of production include crawler tractors and loaders, road rollers, fork-lift trucks, excavators, scrapers, dumpers, and mobile cranes. In view of their ready application in several sectors such as irrigation and power projects and road development work and mining industry, material handling, road construction and airfields, these industries are considered to be of a priority nature in India. For *road rollers*, there is an installed capacity of 1520 numbers. The actual turnout was 335 numbers in 1971. This industry has achieved a high degree of indigenisation which is around 97 per cent presently. The installed capacity for excavators, shovels and draglines is 150 numbers every year, while the installed capacity for *mobile cranes* is 190 numbers. The production of hydraulic truck mounted and mobile cranes is being encouraged. Production of crawler tractors upto 250 h. p. has been well established in the country and full demand is being met. The installed capacity for production of these tractors stands at 600 numbers presently and the actual production in 1971 was 240 numbers. Equally well established is the output range of dumpers, scrappers and motor graders, wheeled loaders and forklift trucks.

POWER MACHINERY

In the power machinery sector, indigenous capacity has been well established for boiler manufacture, both in respect of *industrial boilers* for supplying process steam and for power boilers. The established capacity for power boilers ranges from 30 MW to 200 MW. Practically all types of boilers like vertical, economic, package, water tube varieties range from 100 lbs per square inch to 2000 lbs per sq. inch and steam raising capacity varying from 250 lbs per hour to about 200 lbs per hour were already in production in 1971. The total production of boilers and boiler mounting was of the order of Rs. 410 million in 1971. The power generating machinery (other than electric) contributed as much as Rs. 55.22 million to the country's total export effort in 1971-72. The export value of electrical machinery, apparatus and appliances has secured over about Rs. 187 million in the same year.

The above discussion on the growth and diversification of India's industrial machinery sector is only illustrative. Indeed a broader range of these machinery is being produced in quantities sufficient to meet domestic demand and release surpluses for export. The industrial machinery sector is the virtual backbone of the Indian economy. □

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SIZEABLE ORDER FOR BICYCLES WON

Stated to be the single largest order ever received by a bicycle manufacturer in India, an export deal has been recently concluded by M/s. Atlas Cycle Industries Limited, Sonepat (Haryana), for the supply of 125,000 sports model bicycles worth over Rs. 20 million to U.S.A.

The U.S. market has been particularly responsive to bicycle supplies from India. The bicycles produced by the above firm were displayed in an International Cycle Show at New York and left distinct impressions on the American buyers. The Atlas bicycle also figured prominently on the American television network recently.

The above order received by M/s. Atlas was the result of the visit of a leading American importer to India. The importer placed the order only after being thoroughly convinced of the quailty and standard of the product. With only a 4 per cent import content in its manufacture, the sports cycle to be supplied to U.S.A. will be fitted with 3-gear mechanism.

The American importer, when he visited the factory premises of the above firm is stated to have remarked, "In the United States we did not know much about you and we could hardly imagine that in India you have such a well run and efficiently organised industry. I have no doubt that your people can meet the requirements of the most sophisticated American market".

The export performance of bicycle industry in India has been improving every year. The country occupies today the fifth position among the bicycle producing countries of the world. Its export of bicycle parts and accessories in 1971-72 was of the order of about Rs. 80 million. In the year, the major destinations included Nigeria, Iran, Indonesia, Iraq, Zambia, USA and Singapore.

The increasing trend in bicycle exports from India is also a reflection of the ever growing production in the line. From 1.05 million numbers in 1961, the output rose to 2.30 million numbers in 1970. Currently, there are ten major units active in the production of complete bicycles. Their installed capacity is of the order of 3.33 million bicycles a year. Additionally, the production of bicycle parts amounted to over Rs. 105 million in 1971.

All the important bicycle units in India are well-equipped with modern machines and automatic plants. The products intended for overseas supply are subjected to strict compulsory quality control to ensure that no substandard product is exported. The export order bagged by the Sonepat firm marks one more feather in the cap of bicycle exporters of India.

CAST IRON PRODUCTS IN EXPORT TRADE

A variety of cast iron products such as cast iron manhole covers, pipes and fittings, spun pipes and fittings, valves, malleable iron castings and industrial castings are active in India's export trade. The export business of this group was valued at Rs. 40 million in 1971-72 compared to Rs. 38.7 million in the preceding year, according to the Engineering Export Promotion Council, Calcutta.

Cast iron pipes and fittings as also cast iron manhole covers are the two important export items in this group. The export value of cast iron pipes and fittings was of the order of Rs. 15.45 million during 1971-72. U.S.A's intake was Rs. 3.6 million, followed by that of Tanzania at Rs. 3 million, Singapare Rs. 2.9 million, Kenya Rs. 2 million, and Hong Kong Rs. 2.2 million. The cast iron manhole covers also accounted for a foreign exchange earning of Rs. 5.80 million during the year. Kuwait was the best market for these covers at Rs. 3 million while U.K.'s imports were Rs. 0.7 million and Kenya's Rs. 0.59 million. Cyprus, Hong Kong, Singapore, Tanzania and U.S.A. were among the other buyers. Cast iron spun pipes and fittings also constitute a promising export item in the group with a foreign exchange earning of Rs. 5.3 million. Tanzania was the leading buyer at Rs. 3.07 million, followed by Hong Kong at Rs. 0.52 million; Singapore Rs. 0.38 million and Malaysia Rs. 0.26 million.

M/s. B.C. Iron Foundry of Agra, a small scale firm, improved its exports from 49 per cent of the book value of their production in 1970-71 to about 58 per cent of the production during 1971-72. A notable order secured by the firm was for the supply of 17,500 manhole covers to Kuwait. The order, valued at about Rs. 3 million, was won in the face of international competition. It has already been executed to the satisfaction of the buyer.

Yet another order valued at Rs. 1.5 million was secured by the Agra firm in July, 1972 for supply of cast iron fittings and pipes to M/s. Key Metals Corporation of New York (U.S.A.). The order was placed after the U.S. representatives visited India and ensured themselves about the competitive quality of the products. The Agra firm has also supplied cast iron fittings to American specification to another party, M/s. Mundo Corporation of the U.S.A. The value of the supplies exported to the Corporation was worth about Rs. 2 million. Pipes and fittings and manhole covers manufactured by the Agra firm are also exported in sizeable quantities to Dubai, Abu Dhabi, Saudi Arabia and other West Asian countries. Their products are also sought by Sudan and a few other countries in Africa. They have also supplied metric weights to Zambia.

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EXPLOSIVES TO WORLD MARKETS

Indian explosives are steadily capturing overseas markets in recent years. As against Rs. 1.20 million earned in 1970-71, the products recorded export growth at Rs. 2.22 million in 1971-72.

In the latter year's total export value, fuses, primers and detonators brought in Rs. 1.68 million while propellent powders and other prepared explosives earned Rs. 0.40 million. Besides, gun powders, sparklers and other sorts were active in export trade. Iran, Singapore, Burma, U.K., Sri Lanka, Thailand, Dubai, Tanzania, Kenya, Nepal, Bahrein Islands, Kuwait and South Yemen Republic were prominent importing countries.

In the year ended September 1972, M/s. Imkemex India Limited, Calcutta, exported explosives to the tune of Rs. 1.7 million. Its exports of explosives rose to this level from only Rs. 0.3 million in 1970-71.

The firm is an export house for the products of Imperial Chemical Industries group of companies. During the period under review, the firm's total export turnover amounted to Rs. 21.6 million. During 1971-72 the firm's exports were sought by as many as 37 countries.

The diversified range of non-traditional products exported by the firm during 1971-72 includes polyester fabrics and garments, dyestuffs, rubber chemicals and paints and a host of medium and small scale industries' products.

The country's total production of explosives in 1971 was of the order of Rs. 190 million. The production capacity of the two firms engaged in the production of blasting explosives was of the order of 47000 tonnes and their production was estimated at 32,320 tonnes, valued at Rs. 125.12 million (1971). As against the installed capacity of 14.10 million coils, the production of safety fuses was estimated at 81.27 million coils, vauled at Rs. 11.14 million. In 1971, the figures of installed capacity, estimated production and value of production in respect of other products were : 168 million numbers, 106.70 million numbers and Rs. 49.20 million for Detonators and 9 million metres, 5.80 million metres and Rs. 4.45 million for Detonating fuses. The raw materials required in the production namely Styphenic acid, Sodium acid and its accessories is produced in the country in sizeable quantities.

CHEMICALS AND SYNTHETIC FABRICS ACTIVE IN EXPORT TRADE

India's synthetic fibre fabrics are picking up steady demand in overseas markets. In 1971-72, the exports amounted to Rs. 28 million as against Rs. 19.6 million in the previous year.

During the year, polyester fabrics group netted Rs. 7.15 million as against Rs. 2.20 million in the previous year. Sudan with an intake worth Rs. 3.10 million topped the list of importing countries. In 1970-71, its intake was only Rs. 0.94 million. Nigeria (Rs. 1.35 million), Singapore (Rs. 1.16 million), Zambia (Rs. 0.83 million), Fiji Islands (Rs. 0.13 million) and Indonesia (Rs. 0.12 million) were the other prominent destinations.

Another important category was polyester suiting which earned Rs. 7.17 million as against Rs. 7.96 million in 1970-71. Sudan again occupied leading position, having imported worth Rs. 4.5 million as against Rs. 4.4 million in 1970-71.

Besides, the export earning of other categories was: Nylon Georgette Rs. 3.43 million; polymade fabrics Rs. 1.72 million; Nylon Sarees Rs. 1.57 million; Nylon Satin Rs. 1.31 million and Nylon Brasso Rs. 1.20 million. Singapore, South Yemen Republic, U.K., Sri Lanka and Dubai were the important purchasers. In addition to these categories, fabrics of other synthetic fibres, polyester shirtings, terylene/dacron sarees, nylon tafetta and twinkle nylon were the other categories active in export trade.

India is a prominent exporter of chemicals and chemical products also. During 1971-72, the exports fetched Rs. 72.32 million. Of this, organic chemicals netted Rs. 33.20 million while inorganic chemicals brought in Rs. 39 million. Among the prominent buyers were Japan, U.K., U.S.S.R., Italy, Netherlands, Switzerland, Yugoslavia, U.S.A., Sri Lanka, Dubai, Saudi Arabia, Burma, Sudan, Thailand, Vietnam Republic, Iraq, Singapore and Indonesia.

Adding to the export effort, M/s. Chemicals and Fibres of India Limited, Crescent House, 19 Wittet Road, Ballard Estate, Fort, Bombay, exported chemicals, synthetic fibres, man-made fabrics, natural and synthetic textiles and textile materials including terene garments to West European and West Asian destinations, valued at Rs. 6.3 million during the year ending September 1972. The firm, so far, has contributed over Rs. 40 million to the country's foreign exchange earning.

During the year, the firm produced polyester staple fibre at 5870 tonnes and methanol - a by-product - at 2490 kilolitres. The firm's capacity is stated to have been expanded from 4500 tonnes to 6100 tonnes per annum.

FISH ON EXPORT STREAM

India's marine products enjoy wide popularity in overseas markets. During 1971-72, the export value fetched by these items amounted to Rs. 414 million.

Among a wide range of marine items exported during the year, chilled or frozen prawns and shrimps constituted the largest single product which netted Rs. 357.35 million, accounting for more than 85 per cent of the total export value. Japan was the foremost buyer whose total intake was valued at Rs. 223.5 million. U.S.A. was the next best purchasing country having imported worth Rs. 110 million. Dry and salted fish, an another important category netted Rs. 14.28 million. Sri Lanka was the best importer having absorbed worth Rs. 12.10 million. Dry prawns and shrimps brought in Rs. 3.80 million while canned prawns and shrimps fetched Rs. 23.66 million. U.K., U.S.A., France and German Democratic Republic were the prominent destinations for these categories. Among other products, pomfrets, lobsters and fish preparations in airtight containers were active in export trade.

Recently, M/s. Konkan Fisheries, Verval, Saurashtra, Gujarat, exported frozen shrimps, valued at Rs. 1.5 million to USA. The firm is hopeful of supplying more to that market in the near future.

The firm succeeded in setting up a modern plant to process marine products. The plant's processing capacity is of the order of 5 tonnes per day.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT POSITION OF RAYON AND SYNTHETIC TEXTILES

India's exports of rayon and synthetic textiles including fabrics are estimated at Rs. 61 million during the period of first 8 months of 1972-73 (April-November 1972).

During the period, fabrics, which constituted the major area of export trade earned Rs. 52 million, accounting for over 85 per cent of the entire export earning.

European Zone was the foremost importer, having absorbed worth Rs. 17.41 million, followed by the Asian zone at Rs. 12.47 million, American zone at Rs. 11.55 million, African zone at Rs. 9.35 million and Oceania at Rs. 1.49 million. Rayon tyrecord/yarn, the next best category, fetched Rs. 4.33 million while clothing netted Rs. 2.03 million. The export of hosiery and knitwear amounted to Rs. 0.42 million while other items earned Rs. 2.25 million.

EXPORT TRADE IN IRON AND STEEL CASTINGS AND FORGINGS

The export trade of iron and steel castings and forgings in 1971-72 was estimated by the Engineering Export Promotion Council, Calcutta at a total value of over Rs. 16 million. The share of malleable iron castings was of the order of Rs. 9.8 million while those of industrial castings, steel castings and forgings respectively were Rs. 1.0 million, Rs. 1.8 million and Rs. 3.47million. The Council estimated the overall export trade in cast iron products at Rs. 40 million for the same year.

For malleable iron castings, East Europe has been an important market. Czechoslovakia particularly has increased its purchases consistently year after year. Its intake value was of the order of Rs. 4.78 million in 1971-72 as compared to Rs. 3.45 million in the preceding year. Bulgaria is another important buyer and its imports totalled Rs. 1.83 million in 1971-72 as against Rs. 0.4 million in the year before. Hungarian imports of the item also rose to Rs. 1.83 million from Rs. 1.70 million. Among other importers of these castings were Federal Republic of Germany, Belgium, Iran, Sudan, Tanzania and Zambia.

U.S.A. has recently emerged as a principal customer for India's industrial castings. It absorbed 40 per cent of the total value of exports in the line. Bulgaria, Burma and Switzerland were prominent among other importers. In fact, the category of industrial castings itself has emerged as a new line of export growth. Its export value in 1970-71 was negligible. The Rs. 3.5 million worth of export market for forgings was shared among others by Yugoslavia, German Federal Republic, Syria, U.S.A., Greece, Arab Republic of Egypt and Burma. The Yugoslav imports were nearly Rs. 1 million while West Germany's purchases were of the order of Rs. 0.7 million.

Steel castings constitute another segment of export effort. In 1971-72, their export was valued at Rs. 1.8 million. In fact, in the preceding year, the value was as much as Rs. 6.44 million. The sharp decline was due to the poor intake of Arab Republic of Egypt and Sudan. Together they absorbed as much as Rs. 4.2 million in 1970-71, but in the following year their purchases were less than Rs. 0.3 million. Iran, however, has maintained its imports. Its purchases totalled Rs. 1.06 million in 1971-72 as against Rs. 1.17 million in the preceding year. Bulgaria, Australia, Sri Lank, U.S.A. and U.K. were among the other leading buyers.

In India, all the ferrous castings industries are considered to be of priority nature, in view of their application value in a variety of engineering industries such as railways, automobiles, industrial machinery and machine tools. The iron castings industry including alloy iron castings was in the past producing mainly sleepers and manhole covers but today they embrace the manufacture for many other engineering applications. The diversification in respect of their end-uses has resulted in a 43 per cent increase in production in 1971 over that of 1970. The installed capacity of this industry by 1971 was 328,000 tonnes. Actual production was 114,500 tonnes, at a value of Rs. 230 million. In 1970, the production was only 80,000 tonnes at Rs. 160 million.

The malleable iron castings industry has an installed capacity of 22,100 tonnes per year (1971). Its production was 24,000 tonnes at a value of Rs. 72 million. Here again, the growth in production was substantial as in 1970 it was only 15,600 tonnes, valued at Rs. 47 million.

Output of S.G. iron castings received impetus in recent years due to the substantial orders placed by Indian railways for their requirements of S.G. iron axel box bearings. The capacity installed for these castings was 7800 tonnes and actual output was 2300 tonnes, valued at Rs. 16 million in 1971. Special manufacturing techniques are being introduced in the production of this item.

Steel castings (including alloy steel castings) constitute another item required by various industries such as railways, automobiles, machine tools, chemicals and petro-chemical machinery. There are 43 units in the industry with a total installed capacity of 137,000 tonnes per year. Actual production in 1971 was 56,000 tonnes at a value of Rs. 224 million. As in the case of S.G. iron castings, the major consumer of steel castings in India is the Railway Department. This industry, however, has diversified its items of production to meet the growing demand of various other engineering industries also. Since the production of alloy steel castings require much more specialised equipment and technology, there are currently only a few units manufacturing this item and special efforts are being made to develop capacity further.

The total production value of cast iron castings, malleable iron castings, S.G. iron castings and steel castings stood at Rs. 1191 million in 1971 as against Rs. 1091 million in 1970.

Precision investment castings form a new field of special ferrous castings required for defence production, instrumentation and aeronautics units. Good headway is being made in the development of this industry in a planned manner.

Steel forging industry is the basic feeder industry supplying components to automobiles, earthmoving equipment, railway rolling stock, diesel engines and machine tools industries, as well as the Department of Atomic Energy. There are fifty industrial units engaged in this line of manufacture with an installed capacity of 147,025 tonnes and their actual production was of the order of 60,470 tonnes, valued at Rs. 385 million (1971). It has been targetted that the installed capacity by 1973-74 will reach a level of 220,000 tonnes. Presently, the manufacturing units in this area are capable of producing sophisticated cast die forgings from stainless steel, alloy steel, and tool steel. A single steel forging unit, M/s. Heavy Engineering Corporation in the public sector is capable of manufacturing forgings of large sizes of 35 tonnes per piece. In view of sufficient indigenous capacity and output, no steel forging is normally allowed to be imported.

GAS CYLINDERS ACTIVE IN EXPORT MARKETS

The Indian industry is capable of exporting compress gas cylinders. Over Rs. 1.63 million worth of these cylinders were supplied abroad in 1971-72.

LPG cylinders of iron or steel were mainly supplied to U.K. and Belgium. Nepal, German Federal Republic, Hong Kong, U.S.A. and Poland figure among other importers. High-pressure cylinders were also exported mainly to Nepal, although in small quantity. Other pressure containers of iron and steel as well as aluminium had also revealed signs of export improvement. While Iran was the foremost buyer of iron and steel pressure containers, Belgium, West Germany, U.K., Singapore, Malaysia, Nepal and Kuwait were the other important markets. Iran was again the leading purchaser of pressure containers of aluminium.

Presently, there are 8 industrial units engaged in the manufacture of LPG cylinders, cylinder valves and regulators. The manufacture of high-pressure gas cylinders is included in a big way in the production programme of a public sector unit, M/s. Bharat Pumps and Compressors Ltd., Naini. The installed capacity and the annual production of gas cylinders, valves and regulators are of the order of Rs. 35 million and Rs. 40 million respectively.

EXPORT BOOST OF SEWING MACHINES

From nearly Rs. 1.6 million in 1970-71 to Rs. 5.5 million in 1971-72, the export value of sewing machines and parts has witnessed a big jump. During the first four months of 1972-73, the foreign exchange earning of this industry was of the order of Rs. 1.2 million.

India-made sewing machines have established reputation in the world markets. This has been, in fact, one area of consistent export progress. In 1971-72, the share of household sewing machines (without stand or table) amounted to over Rs. 2 million, half of which was absorbed by the United Kingdom. Sri Lanka, Canada, Algeria, Afghanistan, Nigeria, Kuwait, Sudan, Thailand and Arab Republic of Egypt were among the other major customers. Sewing machines with complete stands and tables were mainly imported by Afghanistan, Nigeria and Libya. Their total export value was Rs. 1.13 million. Sewing machine parts, other than needles, fetched as much as Rs. 2.05 million with Yugoslavia as the most important customer. Yugoslav purchases were nearly Rs. 0.6 million worth, while the U.K., Sri Lanka, Indonesia, Nepal, Mauritius, Singapore and Ghana were among the other buyers. U.K. and Hong Kong were the best markets for sewing machine needles whose export value totalled Rs. 0.34 million in the same year. Japan, Australia, U.S.A. and Yugoslavia figured prominently among the buyers of industrial sewing machines and parts.

From a production of about 33,000 numbers in 1951 to 37,000 numbers in 1971 was a long way covered in terms of production. The value of output in 1971 was of the order of Rs. 45 million. The installed capacity of that year was in the neighbourhood of 493,000 numbers. There are five units presently manufacturing complete sewing machines in the organized sector. The output of sewing machine needles also rose substantially year after year. It was 12.3 million numbers in 1970, at a value of Rs. 1.95 million and 13.22 million numbers in 1971, valued at Rs. 2.10 million. The installed capacity for the needles was 14.4 million numbers in 1971.

EXPORT PERFORMANCE IN COTTON TEXTILES

Special strategies have been devised to achieve the export target of Rs. 1410 million for the cotton textile industry during 1972-73. In the first nine months of the year (1972), the export value was Rs. 944.24 million of which the share of piecegoods was Rs. 501.26 million, yarn Rs. 156.78 million, apparel Rs. 142.79 million, hosiery Rs. 3.8 million and others Rs. 139.61 million. In 1971-72, the total cotton textile export trade was valued at Rs. 1102.70 million.

Among the measures adopted for the realisation of the export target for 1972-73 is the implementation of a voluntary obligation scheme by the textile industry to export 15 per cent of its total production. An exceptionally good cotton crop in the year has provided impetus to some of the units which did not participate adequately in the export trade earlier. The cotton conversion deal with the Soviet Union was another measure undertaken. The deal envisaged an import of 20,000 tonnes of Russian cotton and export of 126.6 million metres of cloth and 5 million pieces of towels to that market. The conversion charges came to Rs. 165.9 million. Emphasis has been laid on maximising exports to quota countries i.e. U.S.A., U.K. and EEC member countries. The U.S.A. quota has been fulfilled for the current year. To U.K. 140 million sq. yards were exported as against a quota of 207 million sq. yards for 1972. The over-all export performance for the year 1972 was of the order of Rs. 1470 million as against the export targets of Rs. 1410 million for the financial year 1972-73.

There appears to be an evident scope for further mproving the export performance in textiles. An allocation of Rs. 65 million was made in favour of priority textile units for import of sophisticated machinery so that the imported equipment can help modernise their factories. With increased availability of domestic nylon and polyester yarns and inter-fibre production and exports are also expected to go up. Another facilitating factor relates to the active plans for establishing indigenous manufacture of crucial items of textile machinery as several collaborations with foreign firms have been sanctioned.

During the Fourth Five-Year Plan, installation of 18,000 automatic looms and 200,000 spindles was programmed. Emphasis has been laid on the installation of wide width looms, terry towel looms and corduroy looms as they would generate exportable fabrics.

With a view to streamlining export arrangements in textiles and centralising exports to major markets against quotas, as also supplementing the export of private traders, the Government of India have recently set up a public sector agency "Textile Export Corporation." Initially, the Corporation is to deal with exports to quota countries and handle bulk deals in yarn exports.

With these specific measures, it is hoped that the textiles of India will continue to earn world popularity as in earlier years.

MUSICAL INSTRUMENTS AND FOREIGN EXCHANGE

Rich in musical heritage and readily blending the use of traditional and modern musical patterns, India has a wide range of musical instruments to offer for export. The foreign exchange value of these instruments totalled Rs. 6.75 million in 1971-22. That the world demand for India-made musical instruments is growing year after year, is evident from the fact that the export earning was of the order of Rs. 5.58 million only in 1970-71.

The export of gramophone records has revealed an upsurge in recent years. Nearly 780,000 records were sold in 1971-72 for a value of Rs. 5 million. Singapore U.K., U.S.A., Yugoslavia, Kenya, Fiji Islands, Czechoslovakia, Guyana, Hungary, Qatar and Trinidad were the important buyers. In addition to gramophone records, phonograph tape recorders as well as other sound recorders and reproducers are available for export. Piano and other string musical instruments earned Rs. 0.2 million with German Federal Republic, Australia and U.S.A. as the leading importers. Harmoniums are primarily supplied to U.K., Lesotho, Fiji Islands, Trinidad, Surinam and Singapore. Other pipe and reed organs are exported among others to German Federal Republic, Fiji Islands, Netherlands, Sweden and U.S.A. U.S.A., West Germany, Denmark and Singapore were among the purchasers of percussion musical instruments.

A wide variety of musical instruments and parts is also active in export trade.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

INDUSTRIAL ROLLER CHAINS AND PRODUCTION TRENDS

The output of all types of industrial roller chains has witnessed improvment in 1971 over that of 1970. With an installad capacity worth Rs. 14.5 million, the output value rose from Rs. 12 million to Rs. 14.5 million in these two years. The range of production has also been substantially diversified. Special varieties of chains like tempo three wheeler main drive chains, built link chains, roller chains for agricultural machinery, bottle carrying chains, conveyor chains and famatex chains have been taken-up for production during 1971.

Due to the production increase and diversification there has been substantial decrease in the import of these products in recent years. The import bill on account of these items during 1971-72 was of the order of Rs. 1.14 million. On the other hand, iron and steel chains and parts fetched an export value of Rs. 1 million in the same year. Thus, while sophisticated varieties and ranges continue to be imported, exports of certain other varieties are becoming possible. Of the chains and parts exported, roller chains were supplied mainly to Yugoslavia, Singapore and Malaysia. They fetched an export value of Rs. 0.2 million. Malaysia and Afghanistan were among the importers of ship chains. Other chains and parts were supplied abroad to the tune of Rs. 0.77 million and Arab Republic of Egypt was the leading buyer.

The export value of chains of all metals was estimated at Rs. 1.63 million during 1971-72 according to the Engineering Export Promotion Council, Calcutta.

PROGRESS IN SAFETY RAZOR BLADES INDUSTRY

Safety razor blades constitute an essential consumer item. India is more or less self-sufficient in its production and no import is allowed. There are seven units in the organized sector with total licenced capacity of 2160 million numbers every year. Besides, expansion schemes of an additional capacity of 1660 million numbers per year have been approved in principle and proposals for a further capacity of 680 million numbers is under consideration. It is estimated that the total licensed capacity in the industry will thus soon be 4500 million numbers a year. The installed capacity in 1971 was of the order of 2035 million numbers and in the same year the actual output was 672 million numbers, at a value of Rs. 31 million.

Till recently, most of the units were engaged in the production of carbon steel razor blades only, but since 1970 they have taken up the production of stainless steel blades in view of the ever increasing demand both in the domestic and export markets.

Although safety razor blade is a highly competitive item, India's export trade has been sizeable. While there was no export of stainless steel variety till 1970, they were supplied abroad in substantial quantities since then.

The installed capacity of 800,000 numbers of safety razors also exists in India. The actual output in 1971 was of the order of 75,000 numbers.

During 1971-72, the export value of safety razor blades amounted to Rs. 1.62 million. Sudan alone absorbed as much as Rs. 1.08 million. Vietnam Republic, Ethiopia and U.S.S.R. were the other buyers. Other razors and razor blades were supplied among others to Sudan, Thailand, Kenya, Sri Lanka and South Yemen People's Republic.

MACHINE BUILDING INDUSTRIES AND FOREIGN EXCHANGE SAVING

Considerable sums of foreign exchange are being saved due to the output expansion and diversification in most of the machine building industries, according to the Directorate General of Technical Development, Ministry of Industrial Development. Domestic production of agricultural tractors, for instance, was of the order of Rs. 283 million in 1971. The foreign exchange expenditure of this industry totalled Rs. 72.7 million, the net saving in foreign exchange due to domestic production thus being of the order of about Rs. 210 million. The output of diesel engines (other than vehicular) stood at Rs. 323 million in the same year and its foreign exchange expenditure was a little over Rs. 11 million. The net saving in foreign exchange was therefore Rs. 312 million.

The foreign exchange element in the production of power driven pumps was also negligible (Rs. 0.5 million) whereas its output rose to Rs. 160 million in 1971 as against Rs. 133 million in the preceding year. The foreign exchange expenditure in 1970 was as much as Rs. 4 million. So was the case of sugar mill machinery whose output value rose from Rs. 146 million in 1970 to Rs. 166 million in the following year; its foreign exchange content considerably declined from Rs. 14.7 million to Rs. 0.4 million.

In 1971, there was no foreign exchange element at all for the production of modern rice mill machinery (Rs. 18.6 million). The rice, pulses and flour mill machinery also did not have any foreign exchange element and its production value was over Rs. 4.5 million in 1971.

In the building and construction machinery sector, the input of foreign exchange was negligible at Rs. 0.5 million whereas its production was valued at Rs. 14 million (1971). For conveyors, whose output was Rs. 95 million, the foreign exchange extent was Rs. 5.7 million only. In respect of cranes and electric hoist blocks, the import content was only 10 per cent and the actual output in 1971 totalled Rs. 60 million.

The railway wagon industry marks an important segment where the foreign exchange component is almost negligible. For a total output worth Rs. 170 million in 1971, it was hardly Rs. 0.1 million. The net saving in foreign exchange due to increased production in commercial vehicles (including cars and jeeps) was as much as Rs. 2119 million out of the total production value of Rs. 2552 million. For motorcycles, scooters, mopeds and scooterettes, the foriegn exchange content was about Rs. 43 million as against the production value of Rs. 317 million.

In the cement mill machinery industry, the 1971's production totalled Rs. 38 million and the foreign exchange input was Rs. 4.5 million. For pulp and paper making machinery, the import content was Rs. 3.8 million against total production of Rs. 52 million. For the progress of chemical machinery, foreign exchange spent was Rs. 10 million whereas the production was of the order of Rs. 183 million.

The output of electric motors stood at Rs. 332 million in 1971 while the import content was only Rs. 5.5 million. For cables and wires, imports were valued at Rs. 155 million and production was Rs. 1434 million.

Gas cylinders (LP) constitute another example where there is no import content at all. The output of this category in 1971 was Rs. 40 million. For storage batteries, dry cells, transformers and airconditioning and refrigerators, the production figures and foreign exchange expenditure respectively were Rs. 190 million and Rs. 33 million; Rs. 274 million and Rs. 46 million; Rs. 449 million and Rs. 22 million; and Rs. 350 million and Rs. 22 million.

INDIA - MADE ROCKET LAUNCHED

India made two stage Centaure rocket was successfully launched from Thumba Equatorial Rocket Launching Station (TERLS), recently. The experiment is reported to be the first of its kind, carried out from TERLS.

The rocket that was launched carried scientific instrumentation to measure among other things, night time airglow emission. These and other radiations were simultaneously measured from an experimental station at Neyyar Dam. The rocket reached an altitude of 148 kilometres. Payloads performed well and ground stations recorded signals till splash down.

TERLS was established a decade back for experiments in the region of earths magnetic equator which runs close to Thumba. It is open to all members of the United Nations for conducting scientific investigations. Upto end March 1972, a total of 129 rockets were launched from this station. These included Soviet M-100 meteorological rockets, Nive-Apache rockets, Rohini - 100 rockets, Rohini - 125 rockets and Menaka-1 rocket, Dual Hawks and India made Centaures and Sukas.

MADRAS OUTER HARBOUR COMMISSIONED

The Madras outer harbour and new oil berth have been commissioned recently. With this, Madras port has become the first in India to receive giant oil tankers.

The outer harbour, named, "Bharati Dock", will now be able to accommodate vessels upto 100,000 tonnes dead weight and oil tankers of 42 feet draft.

The outer harbour project has been completed in six years at a cost of Rs. 260 million. The Ore-berth which is also a part of the outer harbour project, is to be completed in the next two years and will help in exporting about 4 million tonnes of ore every year.

SELF-SUFFICIENCY AND MODERNISATION IN RAILWAYS

The Indian Railway's efforts, during the last twenty-five years at indigenisation of their equipment have led to near self-sufficiency in the design, manufacture, operation of their requirements of equipment and stores. Due to the drive for indigenous manufacture launched by the Railway's Research, Design and Standards Organisation (RDSO), in coordination with Zonal Railways and the industry, the extent of import content in railway's purchases came down from 25.8 per cent in 1955-56 to 8.96 per cent in 1970-71.

Indigenous design and manufacturing capacities for diesel and electric locomotives have been developed during the last 15 years. The locomotive factory at Chittaranjan, Calcutta, established in 1950 to manufacture steam locomotives, has now switched over completely to dieselisastion and electrification, having given up the manufacture of steam locomotives since the beginning of 1972. Upto 1971-72, the Chittaranjan Locomotive Works have turned out 2,351 steam locos, 344 electric locos and 121 diesel locos. The manufacture of electric locos at Chittrranjan is expected to go upto 84 locomotives by 1974-75 as against 46 electric locos turned out in 1971-72. The import content of AC electric locomotives, which was 53 per cent at the beginning of production in 1964-65, came down to 21 per cent in 1971-72.

In addition to locomotives, the Chittaranjan Works are also manufacturing traction motors of 1,580 hp and 600 hp and a wide range of sophisticated static equipment such as electro-pneumatic and electro-magnetic contractors, smoothing reactors, inductive shunts, master controllers etc. as well as Athermos axle boxes. In the initial stages, only the bogie under frames and the shell were made at these Works.

Since their beginning in 1961, upto the end of 1971-72, the Diesel Locomotives Works (DLW) at Varanasi have also produced 427 broad gauge and 80 metre guage diesel locomotives (upto March 31, 1972). The DLW has secured an order for two 1,400 kw diesel generator stationary sets from the Bhaba Atomic Research Centre, Trombay on which DLW's 2,600 hp diesel engine will be utilised.

To meet the requirements of passenger coaches, the Integral Coach Factory (ICF), set up in Perambur, near Madras in 1955, turned out 8,703 coach shells and furnished 6,668 of these upto the end of March, 1972. It is expected to produce 750 fully furnished coaches per year by March, 1974.

The Parambur factory, one of the biggest coach building factories in the world, produces a variety of coaches, both for broad gauge and metre gauge, including first class, third class sleeper, air-conditioned and power cars. The motor coaches and trailers for electric multiple units used for suburban traffic are also manufactured at the factory. The indigenous content of the ICF-manufactured broad gauge coaches excluding steel, is about 97.5 per cent and those for the metre gauges about 92.8 per cent. Manufacture of coaches to indigenous designs is also being undertaken by the Bharat Earth Movers, Bangalore and Jessop & Co., Calcutta.

The Research, Design and Standards Organisation (RDSO) of the Indian Railways have worked out new designs of robust general purpose wagons with increased payload capacity and speed potential. Sophisticated designs of special purpose wagons suitable for transport of chemicals, liquids, gases, petroleum products, minerals and ores have also been developed. Manufacture of wagons is undertaken mostly in the private sector. However, Railway workshops have also manufactured 40,386 wagons so far.

In an effort for track modernisation, manufacture of concrete sleepers with elastic fastenings and the required rubber pads would soon be taken up on a large scale. As it is, all requirements of railway track material including rails, sleepers, fittings and accessories are now met from indigenous sources.

In the context of modern and sophisticated signalling and telecommunication system, the Indian Railways have developed indigenous know-how and manufacturing capacity for a high percentage of signalling equipment including the recently introduced automatic signalling, centralised traffic control, mechanisation of marshalling yards and route relay interlocking. Manufacture of sophisticated items such as microwave technology, signalling relays, electrical point machines, equipment for route relay interlocking, automatic train control and track circuiting is also being underraken in the country.

Indian Railways will soon be setting up three projects—one for the manufacture of wheels and axles, another for gears and the third for extension of rolling mill facility at Jamalpur workshops of the Eastern Railways.

With the achievement of near self-sufficiency in the context of various railway equipment and stores, the Indian Railways are not set to achieve higher train speeds. The Rajdhani Express between New Delhi and Howrah, introduced since March 1969, operates at a speed of 120 kilometres per hour. The maximum speed of this train has now been raised to 130 kilometres. Similarly, the second Rajdhani Express between New Delhi and Bombay introduced in May 1972, runs at a speed of 120 kilometres.

The maximum permissible speed earlier on trunk routes and main lines on broad gauge was 100 kilometers. The speed for passanger trains (other than mail or express) has been 75 kilometres per hour. The maximum operating speed of some mail and express trains has now been increased to between 100 and 120 kilometres per hour. These include the Howrah-Delhi Kalka Mail, the Frontier Mail between Howrah and Bombay, the G.T. Express between Delhi and Madras and the tourist Taj Express between New Delhi and Agra.

A number of instrumented trials at speeds up to 140 to 145 kilometres have also been conducted. In one of these runs conducted in September 1971 between New Delhi and Kanpur, a speed of 162 kilometres was attained for the first time on the Indian Railways.

With the progressive completion of various projects, the Railways have a substantial fleet of locomotives and coaches suitable for operation at 120 kilometres. Over 15,000 kilometre track on the broad gauge system has been brought upto the maintenance standards required at such speeds.

The know-how and expertise developed by the RDSO of the Indian Railways is such that besides functioning as consultants to the Indian Railways and public and private undertakings, they are in a position to render consultancy services on every aspect of railway engineering to other developing countries. It has already rendered such assistance to Iran, Iraq. ARE, Sri Lanka, Taiwan, Syria, Jordan, Saudi Arabia, the Philippines and Thailand. The Indian Railways are now in a position to supply freight wagons and passenger coaches of all types, diesel and electric locomotives of the type at present in use on the Indian Railways, steam loco components, signalling, interlocking and telecommunication equipment of all types including design of signalling systems, track materials, track maintenance equipment, railway forgings and castings of all types, railway bridges and structurals and complete railway turnkey projects for railway lines and workshops.

India has already exported 500 wagons to Hungary; 40 tank wagons to Sri Lanka; 450 tank wagons and 600 hopper wagons to South Korea; 14 tank wagons, 33 coaches, 5 loco boilers and loco components to Burma; loco components to Nigeria; 150 wagons, 100 bogies and 113 complete coaches to Taiwan; 45 bogies to Thailand; loco spares to Syria and 127 wagons to East Africa. Contracts under execution include 500 wagons to Poland, 1,000 wagons to Hungary, 120 wagons and couplers to Sudan, 492 wagons and couplers to Iran, 100 wagons to East Africa, 6 inspection coaches to Zambia and 3,600 wagons to Yugoslavia.

KHETRI COPPER PROJECT

The commissioning of Khetri Copper Project in Rajasthan by end of 1973 is expected to help the country in achieving self-sufficiency in copper, one of the vital industrial raw materials required for fabrication of a large number of engineering products and ancillaries. Development of newly found copper deposits in Malanjkhand in Balaghat district of Madhya Pradesh will also take the country nearer this goal. According to recent reports, 75 per cent of work on Khetri Project has already been completed.

According to Director of Research and Development in Khetri Project, the project would not only be a landmark in copper production but would also pave way for achieving self-reliance in copper mining and refining technology. With experience gained at Khetri, it would not be necessary for India to go in for imported technology or even equipment for either expansion of capacity at Khetri itself or for setting up of new projects elsewhere. The Project could provide competent technical manpower needed for future. When in full production, it would help the country save Rs. 300 million in foreign exchange.

The present production from the only copper smelter in the country at Ghatsila in Bihar is about 9600 tonnes. It was expected to touch 50,000 ton mark by 1977.

ANOTHER INDIA BUILT SHIP READY

Another ship, "Viswa Karuna", a cargo liner has been built by the Hindustan Shipyard Ltd., Visakhapatnam and delivered to the Shipping Corporation of India (SCI), recently.

The Hindustan Shipyard has, so far, built fiftynine ships having a total tonnage of about 0.5 million DWT. Twentyfive of these ships were built for the Shipping Corporation. With the addition of "Viswa Karuna", the SCI has 94 ships and orders for an additional 28 are pending.

As a major shipbuilding unit, the Hindustan Shipyard is adequately epuipped with a modern drawing office, planning and production control departments, moulding loft, 2,000 tonnes Plate Bending Press, foundry, machine shop, blacksmith, sheet metal, plumbing, galvanizing workshops, prefabrication and other ancillary shops.

In quality and workmanship, the Hindustan Shipyard ships have been acclaimed as among the best built anywhere in the world. They carry the highest classification of the Lloyd's Register of Shipping, + 100 Al/ — 100 Al, + LMC. There are two more shipbuilding yards in the country, the Mazagon Dock at Bombay and the Garden Reach Workshop at Calcutta and a third one is under construction at Cochin in Kerala.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

COSTUS ROOT OIL FOR PERFUMERY

A process for the manufacture of costus root oil, used in high grade perfumery products, from the roots of costus plant, has been developed by the National Chemical Laboratory (NCL), Poona. Fructose used in pharmaceuticals and Chamazulene, used in cosmetics for its anti-phlogistic and other medicinal properties, are the two by-products obtained during the production of costus root oil.

The process is important as there appears to be a fairly good demand for costus root oil in foreign countries. The oil has been exported by NCL to a number of countries, including U.K., U.S.A., France and other perfumery products dealers. Indigenous demand for the oil is limited at present but a well organised aromatic chemicals manufacturer can organise a permanent and flourishing export trade in this oil. The manufacture of fructose, obtained as a by-product, is significant as currently the product is procured through import. Lactone mixture obtained in the process is a potential raw material for the production of chamazulene which may also find a way in foreign markets.

In the process, dried costus roots are extracted with a suitable solvent. The extract is concentrated and most of the solvent is recovered. The concentrate is treated to separate the lactones to get the costus root oil in purified form. Exhausted roots after extraction of costus root are further extracted with ethyl alcohol. The residue is extracted with hot water to get inulin, which is hydrolysed to obtain fructose. The lactone mixture obtained during the process of extraction of costus root oil is processed further for obtaining chamazulene. The process has been worked out on pilot plant of 1 kg. of costus root oil per batch. 100 kg. of costus roots (Punjab) will yield 1.5 to 1.7 kg. of costus root oil, 18 kg. of fructose and 60 grams of chamazulene.

Process for extraction of 20 kg. of inulin from 96 kg. of exhausted root powder has also been worked out and conversion of inulin into fructose has been studied on scale of 200 gm. of fructose syrup as well as crystalline fructose. Conversion of 100 grams of lactone mixture into 4 grams of chamazulene has also been worked out. The product has been found to meet the required standards.

The salient features of the process developed by NCL are: it is simple in operation and no heavy equipment is required; raw materials required in the process are indigenously available and solvent used can be easily recovered and the oil obtained has a good storage life and is less liable to polymerisation.

The main raw materials required in the process are costus roots and the solvent. These are available indigenously. The major items of plant and equipment required are rotary knife cutter, extraction vessel, distillation units, vaccum pumps and refrigeration units which can easily be fabricated indigenously,

DESIGN FOR PAPER TWINE MACHINE DEVELOPED

A design for paper twine machine has been successfully developed by the Regional Research Laboratory (RRL), Jorhat. Paper twine finds wide application for packing purposes as well as for making belts.

In other countries, the use of paper twine is well established but in India, it is slowly getting popular. At present, paper twine is being imported in India and the paper twine machine meant for making paper twine is also imported.

The design developed by RRL consists of a paper tape feeding device, dieblocks and withdrawal strand. The necessary drive for the stands are provided from one main drive consisting of a A.C. 3 phase motor and a gas box through a line shaft. The withdrawal strand is designed for uniform pulling of thread. The rate of production of twine is estimated at 100 ft. per minute.

The developed paper twine machine can be used for obtaining different diameters of thread by changing the dies. Between the gear and the motor, a variator pulley is provided for the regulation of speed. The machine can be single strand one, with provision for making a single strand of twine at a time or a multistrand one with provision for making a number of twines at a time. The necessary drives or all the strands are provided from single main drive consisting of a motor, a gear box and line shafts.

All the raw materials like special steel used for open gears and other wear resistant parts, gun metal for bushes and mild steel for other parts, motor, variator pulleys and gear box can be produced from indigenous manufacturers. Lathes, universal milling machine, shaping machine, drilling machine, power hacksaw welding set, grinder and other miscellaneous tools can be fabricated indigenously.

PLASTER OF PARIS FROM GYPSUM

The Regional Research Laboratory (RRL), Jammu has developed a process for the preparation of surgical grade Plaster of Paris (used in orthopaedic departments for fracture) from substandard gypsum mineral available in Jammu. Normally high grade gypsum or selenite quality mineral is for the manufacture of surgical Plaster of Paris but due to the scarcity of the pure mineral, much of the requirements are met by importing the pure mineral or the surgical grade Plaster of Paris as such.

The process developed at RRL, Jammu, is simple. The rock gypsum lumps are broken, washed, crushed, and powdered to the desired grain size. After sieving, the material is beneficiated (wet process) dried, pulverised, sieved and converted to the Plaster of Paris. The setting time is adjusted by the addition of suitable chemical in the mixer. The special advantage in the process lies in the fact that lower grade variety of gypsum is used to make Plaster of Paris avoiding dependence on high grade material and the imports.

The work has been conducted in the Laboratory on 2 kg. scale and later scaling up operations at 50 kg. batches have been carried out. The experiments give consistent results with a yield of about 85 per cent. The product was tested by three independent organisations and was observed to conform to the Indian Standards Specification. It has been tried in a hospital and found satisfactory.

The low grade gypsum mineral required as raw material for the product is available in plenty in the Jammu region.

Jaw crusher, disintegrator, sieve floatation cell, Filter Press, Drying Chamber, Sieve, Calciner, Mixer are the main items of plant and machinery. All are indigenously available or can be fabricated by machinery manufacturers in the country.

SPOTLIGHT ON INSTRUMENTS INDUSTRY

Alongside the significant growth and diversification of the engineering sector, the Indian industry has simultaneously built a strong base for manufacturing the allied ground for a broad range of industrial instruments. By incorporating the latest techniques of production developed elsewhere in the modern world, the instruments industry has come to be considered a key sector for planned progress in the economy. It is not an exaggeration to say that Indian economy is well equipped to competently undertake the production of most of the instrument categories that are turned out by even the advanced industrial economies. Some of the illustrative examples of the wide variety of instruments manufactured in India relate to scientific, optical, surveying and mathematical instruments; industrial precision control instruments; X-ray and electro-medical equipment; medical and surgical equipment; photographic and photo-copying equipment; industrial jewels; and water and house service meters. An interesting feature of the instrumentation produced in the country pertains to its export capability as is evident from the rising graph of foreign exchange earnings. The export future of India's instruments industry is indeed evident in view of the shifts taking place in advanced countries from less sophisticated manufacturing areas to more capital intensive modern fields of production.

The total turnover of the instruments industry in India is of the order of Rs. 400 million per year. Several new lines of instruments have come to be manufactured for the first time in recent years and they include electrostatic photo copying (zerographic) machines, cradiograph recording (ECG), paper and blood transfusion and infusion equipment.

As an effort towards self-sufficiency, two public sector undertakings have been set up in the country, M/s. Instrumentation Limited, Kota and M/s. National Instruments Calcutta, which have registered consistent growth in terms of annual output and quality. The Kota firm has been allowed to diversify their products and the Calcutta firm are mainly engaged in the production of defence equipment.

In the *industrial process control instruments* group which constitutes vital segment for the control and efficient operation of precision plants such as for thermal power, metallurgy, fertilizer, petro-chemicals and other items like cement and paper, the instruments that have been well established for production comprise temperature transmitters, precision transmitters and controllers, flow controllers, magnetic-electric and electronic instruments, as also pneumatic, mechanical and hydraulic instruments.

The total value of output in the group has been estimated at Rs. 68 million in 1971. Its output marks a sizeable improvement over its value in preceding years. The production growth has been mainly made possible due to successful operations of the Kota firm in the public sector, which went into production in 1968 with Soviet collaboration. The firm's production capacity has reached a level of Rs. 50 million per annum. It is expected to reach a capacity of nearly Rs. 200 million per year by 1980. In addition to this public sector unit, six more private firms are engaged in the production of various types of industrial process and control instruments. The annual value of their output is estimated at about Rs. 20 million every year.

In view of the sufficient indigenous capability that is established in this line, imports are not normally allowed excepting in respect of certain sophisticated instrumentation which is absolutely essential to complete the systems of various process industries that are developed indigenously. Even in respect of such sophisticated types which are being imported, gradual efforts are made to develop domestic capacity. In sum, the industrial process instrumentation has been established to the level of about 90 per cent of total requirements.

Recently, another instrumentation unit has been set up in the public sector for the production of control valves with a capacity of Rs. 30 to Rs. 40 million.

The production of *scientific, optical, surveying and mathematical instruments* was in the neighbourhood of Rs. 24 million in 1971. Twelve units engaged in the manufacture of these instruments have an installed capacity of about Rs. 38 million. Among these units, M/s. National Instruments Limited, Calcutta and M/s. Andhra Scientific Company, Machilipatnam are in the public sector and turn out a large variety of scientific instrumentation. The Calcutta firm has recently taken up production of sophisticated advanced equipment also, in addition to scientific surveying instruments.

As the import bill for *x-ray and electro-medical equipment* has been substantial, it was felt that quick meausres be taken to bring about self-reliance in this field. Several imported equipment have been successfully Indianised in recent years. X-ray equipment upto 500 ma capacity are now being produced indigenously. M/s. Bharat Electronics Limited, Bangalore, again in the public sector, started sizeable production of several types of x-ray tubes needed for diagnostic sets. ECG machines (single channel), both transistorised and mains supply units are also being produced in the country. Additionally, the Laboratory Research Development Establishment of the Defence Ministry and Central Scientific Instruments Organisation, Chandigarh have developed a wide range of medical instruments for commercial exploitation. A few units have taken up the production of intensive care therapy units. Cobalt therapy units are being developed wholly on indigenous know-how.

The value of production of x-ray and electro-medical equipment has gone up year after year. It was a little over Rs. 15 million in 1970 and about Rs. 25.5 million in 1971. The production value of this equipment achieved by a single firm, M/s. BEL Bangalore, was of the order of Rs. 2.5 million (1971). M/s. Tokshu Menon Paper Manufacturing Company Madras, have produced sizeable equipment of ECG paper for use in ECG machines. The quality of their products is comparable internationally and the firm is well poised to supply the same overseas.

Another category of progressive development relates to *medical and surgical instruments*. With 8 manufacturing units in the line, these instruments have an installed capacity of Rs. 35 million per year. Their actual production in 1971 was over Rs. 16 million. In terms of quantity, the output was 6.2 million numbers in the same year. Recently, one of the manufacturing units has gone into production of blood transfusion and infussion equipment. The output value of this firm, M/s. Laboratory Vifor, was of the order of Rs. 5 million.

Production of various types of *electrical measuring instruments* has also gone up in recent years. There are 8 units in this field with an installed capacity of about Rs. 25 million. Their actual output is of the order of Rs. 14 million every year. One of the units, M/s. Philips India Ltd. has recently taken up the manufacture of moving coil instruments. Another firm has developed trivectometer fully based on indigenous know-how.

The capacity available for *photographic and photocopying instruments* is worth Rs. 6.3 million per year. The actual output in 1971 was over Rs. 4.7 million. In addition to the ammonia type of photo-copying machines produced earlier by the industry, two firms, namely, M/s. Macneill and Barry, and M/s. Advani Oerlikon have produced zerographic machines with know-how received from National Physical Laboratory (New Delhi). A Baroda firm, M/s. New India Industries has also gone into trial production of cameras for export performance.

The production of *house-service meters* has registered improvement year after year. The output of both single phase and poly-phase meters was estimated at 2.9 million numebrs in 1971. There are 15 manufacturing units for the production of this product with an installed annual capacity of 1.7 million numbers of single-phase meters and 6.5 million numbers of poly-phase meters.

The production of *water meters* totalled Rs. 12 million in 1971. Six units in this line have an installed capacity of Rs. 35 million. The output of water meters in terms of quantity was in the neighbourhood of 165,000 numbers in 1971.

As the instruments industry was largely dependent on imported components, the development and production of sophisticated components attracted priority. There is a unit to produce *industrial jewels* with an annual capacity of Rs. 5 million and another unit for the manufacture of bi-metal components has a similar capacity. The output of bi-metal components in 1971 reached a level of Rs. 6.53 million.

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M/s. Industrial Jewels Limited, Bombay have come to produce different types of jewels required for the meter industry. The jewels are presently banned for import. This firm has been recently issued a letter of intent for the production of 55 million numbers of jewels out of which 90 per cent is to be exported. The total production achieved in the jewels industry is about Rs. 5 million.

Such are the contours of development in the instruments industry in India. The export performance of this industry is noteworthy in view of its gradual improvement every year. In 1971-72, the export value of scientific, medical and optical, measuring and controlling instruments and parts was of the order of Rs. 16.5 million; it was only Rs. 14.22 million in 1970-71.

In this group, medical instruments contributed Rs. 6.62 million. Of this, the major varieties exported include anaesthetic equipment to Kuwait, surgical forceps and clips mainly to Soviet Union, surgical knives and scissors to Sudan and Canada, surgical suture needles primarily to Nigeria and medical, dental and surgical instruments to the Soviet Union, Nepal, Kenya, Italy and Ghana, among a total of 42 countries. Blood pressure instruments, hollow needles for injections, stethoscopes, surgical chisels, gauges and syringes, mechanical therapy appliances; measuring, controlling, and scientific instruments were exported to the tune of Rs. 3.93 million. Even x-ray equipment was exported at a value of Rs. 1 million, more than half of which was absorbed by an important market like the German Federal Republic. Next in importance was Philippines. Japan, Spain and U.S.A. also figured among the importers of India's x-ray equipment.

Other specific products of export include surveying instruments and parts; mathematical and calculating instruments; measuring rods and tapes; model instruments for education; mechanical appliances for testing physical properties of industrial material; chemical thermometres, apparatus for measuring liquids and gas flows; physical or chemical analysis instruments and parts and drawing instruments. Direction-wise, Sudan, Kenya and Iraq are among the customers for mathematical and calculating instruments. Spain, U.K., U.S.A., Iran, Iraq, Canada, Cyprus, German Federal Republic and Greece are the principal importers of measuring rods and tapes. Malaysia, Singapore, U.S.A. and Nepal are the major buyers of survey instruments. U.K., U.S.A., Denmark, Malaysia, Kenya and Japan are the importers of model instruments for education including technical models and parts. Australia, Malaysia, U.K., U.S.A. and Sweden purchased hardness strength testing machines. For clinical thermometres the major markets include Canada, Philippines, Sweden, Turkey and Malaysia.

Yet another category of export promise relates to photographic and cinematographic supplies. Though small in quantity, these exports indicate the capability of this line of manufacture as it is poised now for improving its overseas supplies for sophisticated lines comprising x-ray equipment, unexposed films, cine films, both black and white and coloured. Their export earning in 1971-72 was of the order of Rs. 0.4 million. In addition, cinematographic films earned as much as Rs. 50 million in 1971-72. These films reach a very wide range of countries every year.

Water meters constitute an additional line of export growth. Their overseas earning was of the order of Rs. 0.2 million during 1970-71, which was more than doubled to the level of Rs. 0.5 million in 1971-72. The export improvement was due to the increased offtake by South Vietnam, Kenya, Arab Republic of Egypt and Saudi Arabia. ☐

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BATTERY KNOW-HOW FOR EXPORT

Besides making impressive strides in the physical export of batteries, the Indian industry is today in a position to undertake overseas supply of battery know-how also. The total export value of batteries and accumulators in 1971-72 amounted to Rs. 25.57 million. Flash light batteries were mainly supplied to Sudan; other dry cell batteries to Sudan, Nepal, U.S.S.R., Malaysia and Thailand; wet cell primary batteries to German Democratic Republic, U.S.S.R., Iraq and Sri Lanka and accumulators to U.S S.R., U.K., Kuwait, German Democratic Republic and Yugoslavia.

From a modest beginning as a repairer and re-builder of batteries from salvaged containers and components, M/s. Standard Batteries Limited, Vakola, Santa Cruz, Bombay-55, has today emerged as an important manufacturer-exporter of batteries and more significantly, as an exporter of know-how for battery manufacture. The company is presently assisting Sudan and Indonesia in setting up their battery manufacturing units. A Government owned engineering corporation in Sudan sought the Indian firm's assistance for a turnkey project under which a wide range of battery components like plates, separators, hard rubber containers and equipment for assembling 50.000 batteries per year are to be supplied. The Indian firm's experts are to train Sudanese personnel and supervise the assembly of batteries initially. Simultaneously, the job for setting up the manufacturing plant will also be taken up. The entire order is valued at Rs. 4.5 million.

Another example of the Indian company's competence in overseas supply of battery know-how relates to its having secured the job for setting up a battery manufacturing plant at Indonesia's major port of Surabaja. Under the joint venture, India is to have a majority holding, with M/s. Standard Batteries and M/s. Tata Exports sharing the equity. The project is valued at $ 1.5 million and under the arrangement, M/s. Standards are to supply the equipment, know-how and management, to the Indonesian Railways over a period of five years. Initially the joint project is to concern itself with the manufacture of containers, covers and assembly of automotive batteries as well as train lighting equipment. In the following year, manufacture of battery plates will be undertaken. Production of lead oxide is to be included in the third year, while the separators required for batteries will be produced in the fourth year. The fifth and final year provides for the installation of machinery required for battery manufacture. Till then, the joint venture proposes that the Indian firm should continue to supply 150,000 finished batteries every year and later the components that would go into the final manufacture.

The Bombay firm had earlier undertaken successfully the export of automotive batteries to Sri Lanka, batteries and components for traction to German Democratic Republic and train lighting cells to Iraq. In 1968, out of the total export of batteries from India, the share of this firm was as much as 90 per cent. Recently two of the firm's battery-operated trucks and 16 trailers were exported to Ghana also.

The Bombay firm received recently two major export orders from U.S.S.R. and Poland. M/s. Machinoimport, Moscow, placed repeat orders on the firm for traction batteries, spread over a period of four years ending 1975. The value of the export order (about Rs. 1.7 million for 1972) is expected to increase progressively to nearly Rs. 5 million in 1973, Rs. 7.5 million in 1974 and Rs. 10 million in 1975.

For the first time, the firm also signed an export contract with Poland's M/s. Elerktrim of Warsaw. The export value of this contract was worth Rs. 2 million. In 1972, 12,000 automotive batteries were already supplied. The expected supply during 1973 is for 62,000 batteries and 136,000 batteries in the subsequent two years.

Among other achievements made by the firm in the context of battery manufacture, one relates to the successful production of hard rubber containers for the first time in 1947. They achieved import substitution by mass production of batteries for tractors, omnibuses and heavy duty vehicles. They claim distinction for being the first in India for producing aircraft batteries including containers. The company also began the manufacture of stationary batteries for telephone and telegraphs, carrier systems and power houses, as also switchgear control and traction batteries used as prime sources of power for battery-operated vehicles and mining locomotives.

ELECTRO-MECHANICAL HOISTS TO U.S.S.R.

Indian exports of mechanical handling equipment earned foreign exchange worth Rs. 3.80 million in 1971-72, according to the Engineering Export Promotion Council, Calcutta.

During the year, Cranes and parts constituted the major category, having earned Rs. 1.85 million. Singapore was the leading importer at Rs. 0.68 million, followed by Kenya at Rs. 0.55 million, Arab Republic of Egypt at Rs. 0.51 million and U.S.A. at Rs. 0.10 million.

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Lifts and components, the second best category fetched Rs. 1.52 million. Arab Republic of Egypt topped the list of importing countries, having absorbed worth Rs. 1.17 million. Sri Lanka, Nigeria and Afghanistan were among the other destinations.

Hoisting and pulling machines, yet one more category brought in Rs. 0.30 million. Yugoslavia, Muscat and Malaysia were the prominent markets. Besides, lifts and components were mainly imported by Muscat and Iran.

M/s. Tecalemit Hind Limited, 8 & 12, Chittranjan Avenue, Calcutta, one of the firms engaged in the manufacture of a wide range of engineering items, recently secured an export order worth Rs. 5 million from U.S.S.R. for the supply of electro-mechanical hoists and certain garage equipment such as car break testers, wheel balancers, quick tyre changers, car washers and transportable servicing units. The order was secured against stiff global competition.

The Calcutta firm's production range includes complete garage servicing equipment, industrial lubrication equipment for light and heavy industries, nylon tubing for fuel, air and lube lines, high pressure nylon hoses and fitters. In the field of import substitution too, the firm's contribution is noteworthy. It saved foreign exchange to a level of Rs. 5.4 million by way of import substitution.

CONSISTENT INCREASE IN MARINE PRODUCT EXPORTS

The exports of marine products have maintained a steady uptrend over the past few years. The export value of these products reached a leval of Rs. 414 million in 1971-72 as compared to about Rs. 351 million in the previous year. It was only Rs. 71 million in 1965-66, Rs. 173.7 million in 1966-67, Rs. 197.20 million in 1967-68, Rs. 247 million in 1968-69, and Rs. 334.5 million in 1969-70. The prospects for 1972-73 are still brighter. For the first five months of 1972-73 the export earning was Rs. 232 million as against Rs. 128 million in the corresponding period of 1971-72.

Though about 80 per cent of the exports of marine products from India are accounted for by frozen and canned shrimps, the country offers a wide range of these products such as canned lobster tails, dried prawns, fish maws, canned fish, shrimp powder, fish pickles, prawn pickles, fish oil, cuttle fish bones, sea shells, tortoise meat, fish meal and turtle. Japan, U.S.A., U.K., Australia, France, Singapore, Hong Kong, Federal Republic of Germany, Belgium and Netherlands are the major destinations for these products.

Adding to the export effort in the line, M/s. Gujarat Agro-Marine Products Ltd. (GAMP), Ahmedabad, a subsidiary of the state owned Gujarat Agro-Industries Corporation (GAIC), has exported sizeable consignments of shark fins, lobster tails, fish maws and shrimps to Singapore, U.S.A., Japan and other Far East countries within the short span of its existence. The export value of shark fins, fish maws and frozen prawns and lobsters alone, exported by the GAMP, amounted to Rs. 1 million. Of this, the share of prawns and lobsters was Rs. 600,000 while shark fins and maws accounted for the balance of Rs. 400,000. The exports of the company are expected to reach a level of Rs. 7 million in the near future.

GAMP owns 10 mechanised trawlers of 42 feet length fitted with 75 HP marine diesel engines, which operate along the Gujarat coast. The company has also started the construction of a Rs. 3 million processing complex of its own at Veraval. The complex is to have a pilling shed, a processing house, frozen storage space, and an ice factory with a capacity of 20 tonnes of ice per day. Pending the completion of this complex, the firm has made an interim arrangement for a processing house at Bomby. Currently, it processes about 3 tonnes of marine products everyday. The indications are that the firm will ultimately have a capacity to process about 100 tonnes of material worth Rs. 3 million. Additionally, it will process about 20 tonnes of lobster tails for export to U S.A. and Japan.

India is seventh among the fish producing countries of the world. The marine fish landing of the country rose from 0.5 million tonnes in 1951 to about 1.75 million tonnes in 1970. In 1971, it was estimated at 1.88 million tonnes including 1.18 million tonnes of marine fish and 0.70 million tonnes of inland fish

SOAPS IN EXPORT TRADE

A gradual growth has been witnessed in the export earning of soaps made in India. During 1971-72, the export value increased to about Rs. 6.50 million from Rs. 2 million in the previous year. In the first five months (April-August) of 1972-73, the value was Rs. 2.84 million.

Among the export varieties of soaps, toilet soaps (other than dental soap) alone earned as much as Rs. 2.25 million in 1971-72. Of more than 40 countries that imported this variety, Nepal with an intake of more than Rs. 1 million topped the list of buyers. The other leading buyers were Thailand, U.S.A., Malaysia, Tanzania and Hong Kong. Household laundry soap was another important export variety, having earned nearly Rs. 2 million during the year. Nepal was again the major buyer. Malaysia and Singapore were the other destinations. Soap flakes, chips and powder, soap bars and medicated soaps were the other varieties exported in the line.

M/s. Godrej Soaps (P) Limited; Eastern Express Highway, Vikhroli, Bombay–74 have succeeded in introducing deodarant beauty soaps like 'Cinthol' and 'Sandal' in the U.S.A., Canada, Australia, West Germany, Italy, Hong Kong, Thailand, Venezuela and Fiji Islands. The export value of their soaps and toiletries during 1972-73 is likely to be around Rs. 0.7 million.

Besides soaps and cosmetics, the Bombay firm is engaged in the manufacture of other items such as glycerin, solvent oils and meals, unbleached, bleached and distilled fatty acids and animal feeds. Together with soaps, the export value of the entire range of their products is estimated at nearly Rs. 30 million per year.

Against an installed capacity of 217,822 tonnes per annum in the organised sector, India's total production of soaps during 1971 was estimated at 270,813 tonnes compared to 232,400 tonnes during 1970.

SOFT DRINK CONCENTRATES ON EXPORT STREAM

Indian beverages (alcoholic and non-alcoholic) were exported to the tune of Rs. 257,000 in 1971-72. Of this, alcoholic beverages netted Rs. 169,500. Grape wine, beer, brandy, liqueurs and whisky were mainly exported to UK, Nepal, France, Bahrein Islands, Fiji Islands, Qatar, Sudan and Japan. Non-alcoholic beverages earned Rs. 875,00. Lemonade and flavoured water, were the items primarily absorbed by Nepal, Kuwait, Bahrein Islands, Sudan and Japan.

M/s. Coca Cola Export Promotion Corporation, New Delhi, exported 2000 units of Coca Cola concentrate, valued about Rs. 1 million to the Coca Cola bottling plant in Nicosia (Cyprus). The Corporation is currently engaged in supplying the concentrate to Denmark, Nigeria, Ethiopia, Bangladesh, Sri Lanka and Malaysia. In 1971-72, the Corporation exported concentrate worth Rs. 130,000.

The Corporation, in conjuction with its international associates, developed a market for various fruit beverage bases. During 1973, the Corporation hopes to supply mango beverage base to United States, at about Rs. 2 5 million.

ENGINEERING GOODS SOUGHT BY MUSCAT

Engineering products manufactured in India are being sought by world markets in larger quantities year after year. During 1971-72, the export value fetched by these products amounted to over Rs. 1260 million.

Some of the established industrial concerns are currently diversifying their manufacturing and export range. M/s. Burmah Shell Ltd., Ballard Estate, Bombay, is one such firm which has recently entered the field of exports and assumed the role of 'merchant exporter' having made its maiden export performance by supplying engineering products to its associates abroad. Recently, the firm booked orders worth Rs. 1.25 million for the supply of engineering goods to a leading oil exploring company in Muscat. Presently, the firm's exports are confined to Muscat only and it expects to raise its export level to the tune of Rs. 2 5 million by mid-1973.

The firm has also undertaken a market study recently and has concluded that a variety of engineering items manufactured in the country, such as, chassis and buses, valves, pipe fittings, spares, safety helmets, tube lights and bulbs and multi-purpose tents and tarpaulins could be exported, in view of their competitiveness.

EXPORT PERFORMANCE AND POTENTIAL

RECENT TRENDS IN INDIA'S EXPORT TRADE

The first five months of 1972-73 (April-August 1972) witnessed India's total export value at Rs. 7598 million as compared to Rs. 6375 million in the same period of 1971-72.

The improvement of the export trade was made possible due to the increased offtake of a wide variety of products. In the food and live animals group, marine products registered a substantial uptrend to the level of Rs. 232 million from Rs. 128 million. Export of wheat which was negligible in the same period of 1971-72 rose to as much as Rs. 193 million. Fruits and vegetables also fetched more foreign exchange at Rs. 376 million as against Rs. 337 million. The overseas supplies of tea and coffee were more or less maintained at Rs. 576 million as compared to Rs. 567 million and Rs. 134 million as against Rs. 139 million in the export performance respectively.

Tobacco exports showed considerable improvement. The export of unmanufactured tobacco which was nearly Rs. 299 million in April-August 1971 secured as much as Rs. 384 million in the same period of 1972.

Among textile fibres and waste, cotton was fairly active on the export market, having brought in Rs. 118 million against Rs. 80 million while wool and other animal hair fetched Rs. 24 million against Rs. 18 million. Jute fibre also improved to Rs. 24 million from the earlier level of Rs. 4.7 million.

Metalliferous ores and metal scrap, however, registered a decline to Rs. 385 million from Rs. 452 million mainly due to the decreased offtake of iron ores and concentrates (Rs. 336 million against Rs. 368 million).

The export value of petroleum and petroleum products more than doubled to earn Rs. 52.30 million against Rs. 26.60 million. The group of chemicals also revealed an export uptrend–to Rs. 151 million from Rs. 134 million. Chemical elements and compounds including organic chemicals, inorganic chemicals, oxides and halogen salts were supplied abroad to the tune of Rs. 35.8 million compared to Rs. 31 million. Dyeing, tanning and colouring materials netted Rs. 34.50 million against Rs. 19.72 million. The offtake of medicinal and pharmaceutical products, however, fell to Rs. 29.50 million from Rs. 41.65 million. The group of essential oils and perfume materials fetched more at Rs. 42.33 million in comparison with Rs. 33.80 million.

Among the manufactured products, several categories showed trends of export dynamism. Leather and leather manufactures which earned foreign exchange worth Rs. 351 million in the first five months of 1971-72 improved their performance to Rs. 595 million in the same period of the following year. Rubber and rubber manufactures, paper and paper board and manufactures, glass and glassware were, among the products that saw a sizeable export improvement. A notable improvement took place in respect of textile yarn fabrics also. This section fetched Rs. 1849 million against Rs. 1568 million. Jute manufactures (excluding twist and yarn) were exported to the tune of Rs. 1137 million as compared to Rs. 994 million; cotton manufactures (excluding yarn, thread and clothing) Rs. 416 million against Rs. 338 million; floor coverings and tapestries Rs. 97.7 million against Rs. 73.5 million; textile yarn and thread Rs. 137.6 million from Rs. 95 million. The foreign exchange value of pearls, precious stones rose considerably to the level of Rs. 285.34 million from Rs. 185 million.

While the entire group of iron and steel earned less at about Rs. 190 million as compared to Rs. 218 million, specific categories like pig iron and tubes, pipes and fittings gave a better account. The export of pig iron and sponge iron fetched Rs. 72.8 million against Rs. 64 million. Steel tubes and pipes earned Rs. 53 million as compared to Rs. 42 million. The decline in the overall export earning of iron and steel group was mainly due to the poor offtake in respect of rails and railway track materials, iron and steel castings and forgings and iron and steel bars, rods and angles.

The machine and handtools constitute another area of export growth. They fetched Rs. 29.3 million as compared to Rs. 21.5 million. Metal manufactures also revealed increased export trends.

As in the case of iron and steel, non-electrical machinery also witnessed some fall in exports from Rs. 116 million to Rs. 111 million. But the offtake of power generating machinery improved sizeably to Rs. 31.3 million from Rs. 24.2 million. But the overseas supply of textiles and leather machinery, office machines and agricultural machinery suffered a setback.

Another line of export growth, electrical machinery, apparatus and appliances, continues to reveal an uptrend in the period under review (Rs. 98 million as compared to Rs. 83 million). Almost all categories in this group have registered improvement. Electrical power machinery and switchgear, for instance, recorded an export value of Rs. 21.9 million as against Rs. 20.6 million; equipment for distributing electricity fetched Rs. 28.8 million against Rs. 23.5 million; domestic electrical equipment Rs. 15 million against Rs. 8.6 million and other electrical machinery and appratus Rs. 21 million against Rs. 16 million. The offtake of telecommunication apparatus, however, suffered at Rs. 11.6 million from Rs. 14 5 million.

Road vehicles other than motor vehicles (mainly bicycles) constitute a product group of consistent export expansion. Their exports totalled Rs. 38 5 million against Rs. 28.6 million. The offtake of road motor vehicles was accounted at Rs. 46 million against Rs. 47 million. Among other transport equipment exported by India, aircraft has come to be included in a prominent way. Railway vehicles fetched only Rs. 9.5 million as against Rs. 26 million in the comparable years.

Directionwise, the African region absorbed India's exports worth Rs. 465 million in the first five months of 1972-73 as against Rs. 477 million in the same period of 1971-72. The offtake of U.S.A. increased to Rs. 1198 million from Rs. 1160 million. The Latin American continent absorbed Rs. 23.7 million only against Rs. 46 million. The ECAFE countries group imported more at Rs. 1853 million in comparison to Rs. 1593 million. Japan particularly improved her purchases to the tune of Rs. 789 million from Rs. 681 million. The export value of supplies to Bangladesh was of the order of Rs. 329 million in the first five months of 1972-73 as against none in the same period of the preceding year.

The East European region which marks a major area of India's export growth imported Indian goods worth Rs. 1821 million as against only Rs. 1428 million in the comparable periods. The offtake of U.S.S.R. particularly improved from Rs. 874 million to Rs. 1181 million. Bulgaria, Czechoslovakia and Poland were other markets where Indian exports registered sizeable rises. In West Europe, the EEC markets absorbed as much as Rs. 787 million against Rs. 444 million. The major markets that were responsible for the increases were the Federal Republic of Germany (Rs. 263 million against Rs. 147 million), France (Rs. 160 million against Rs. 81 million), Italy (Rs. 164 million as compared to Rs. 82 million), Netherlands (Rs. 101 million as opposed to Rs. 54 million) and Belgium (Rs. 98 million as against Rs. 80 million). The United Kingdom also increased its offtake to the tune of Rs. 745 million in comparison with Rs. 678 million.

EXPORT PERFORMANCE IN WOOL AND WOOLLENS

The first three-quarters of 1972-73 witnessed a notable improvement in India's export value of wool and woollen products. In the period (April-December 1972) the foreign exchange value was of the order of Rs. 365.20 million, an improvement of Rs. 47 million over that of the same period in 1971-72. The major categories that have contributed to the substantial growth in the export value were woollen carpets and hosiery items. Carpet exports rose to the level of Rs. 160 million in the first nine months of 1972-73 as against Rs. 97 million in the same period of the preceding year. Hosiery exports also moved upto Rs. 139.6 million from Rs. 107.8 million.

The export growth in carpets was due to their larger offtake by German Federal Republic, U.S.A., U.K., Canada, Netherlands and Sweden. The Soviet Union was responsible for the improvement in the offtake of woollen hosiery. Poland, and Czechoslovakia wer the other major East European markets that registered improvement.

The export value of raw wool also revealed uptrend to earn Rs. 34.54 million as compared to Rs. 26.48 million. U.K., U.S.S.R. and Belgium turned out to be the major raw wool markets in the period under review.

While woollen carpets and hosiery proved to be the foremost category of export expansion, export trade in woollen fabrics and garments registered decline. The fabric exports reached only Rs. 13.7 million in the first three quarters of 1972-73 as compared to Rs. 18.63 million over the comparable period of the preceding year. Likewise, garment's exports slipped down to the level of Rs. 12 million from Rs. 15.7 million.

The U.K. market continued to be the best buyer of woollen/worsted and mixed fabrics at Rs. 6.8 million as compared to Rs. 3.3 million, followed by Canada at Rs. 1.45 million against Rs. 1.14 million. The Hungarian and Soviet markets, however, witnessed substantial decreases. As in the preceding year, the Soviet Union topped the list of buyers for woollen ready made garments. Its intake fell, however, to Rs. 8.7 million from Rs. 13.4 million. The other major markets for the garments were Sweden, Norway and German Federal Republic.

M/s. Alps Knitting Works, Chowk Saidan, Ludhiana, happened to secure the prime position in respect of woollen knitwear exports to free currency markets in the first three quarters of 1972-73 Their export value was worth Rs. 1.37 million in the period. Another firm, M/s. Nagesh Hosiery Mills, Sant Dass Street, Ludhiana, earned Rs. 9.2 million during 1971-72 by way of their hosiery exports. The total hosiery exports from India was less than Rs. 40 million in 1967-68 and it improved by almost three times and helf to about Rs. 137.70 million in 1971-72.

EXPORT POSITION IN LEATHER

About 80 per cent of leather product exports from India emerges from E.I. tanned and wet blue hides and skins. These are semi-processed varieties and are mainly supplied to developed countries where they are further processed into finished leathers and utilised for the manufacture of leather products. In the first seven months of 1972-73 (April-October 1972), the export value of leather and leather manufactures was estimated at over Rs. 870 million of which the share of E.I. tanned and wet blue hides and skins was of the order of Rs. 760 million.

Notwithstanding the declared policy of export trade in the line to shift emphasis from the export of semi-processed hides and skins to manufactured leather and leather manufactures, the established trade pattern continues and the semi-processed hides and skins still account for the bulk of the leather product exports. In view of this, the Indian Government set up a committee in July 1972 to recommend measures to expeditiously switch over to exports of finished leather and leather manufactures. The Committee suggested quantitative restrictions on exports of semi-processed hides and skins in a manner that these exports are progressively reduced year after year and after eight to ten years are brought to a level equal to 15 per cent of the 1971-72 export volume. Simultaneously, development efforts should be undertaken for creating the necessary industrial infra-structure and for establishing sufficient capacity to produce finished leather and leather goods in the country, the committee suggested. Although a final decision is yet to be taken by Government on the committee's recommendations, these are likely to be accepted.

It is in this context that the Government's decision to canalise exports of semi-processed hides and skins through the State Trading Corporation should be appreciated. No doubt, quantitative restrictions on exports of semi-processed hides and skins could have been imposed without resorting to canalising the item if the intention is only to regulate exports of this commodity. But as massive efforts for development of the industrial infra-structure are also to be undertaken, canalisation would become necessary, with a strategy for the development of the industry constituting a vital part of the canalisation move. Neither of the arguments that the canalisation would result in decline in foreign exchange and the expertise of private exporters in the line would not be available, is valid. The policy of canalisation aims at improving the foreign exchange earnings and utilisation of private entrepreneurship by the State Trading Corporation.

Pursuant to the canalisation decision, the State Trading Corporation has bean directed by the Government to work out schemes for assisting manufacturers of footwear and other leather goods in the small scale sector as also to arrange for supply of raw materials to the manufacturers at fair price.

Footwear exports of all types and to all destinations have already been canalised through the State Trading Corporation.

EXPORT REVIEW OF PLASTICS AND LINOLEUMS

On the basis of an official survey, India's contribution in world trade of plastics and linoleums by 1975 is expected to improve to 4.5 per cent as against 0.87 per cent in 1969 and 0.94 per cent in 1968. In terms of value, world trade in 1968 was of the order of Rs. 4240 million and Rs. 5730 million in the subsequent year. In these years, India's share was Rs. 40 million and Rs. 50 million. On the assumption that world trade could be static in 1975, India's share is estimated at Rs. 260 million by that year.

In 1971-72, India's export earning of plastics and linoleums stood at Rs. 63 million. In the first eight months of 1972-73 (April-November, 72) the estimated export trade was in the neighbourhood of Rs. 42 million.

The major items of export from India are linoleums, PVC sheeting and leather cloth, bangles, fountainpens and polythene plastic goods. To be able to sustain the export growth, it is recognised that diversification in domestic production is essential. Presently, production of plastics is mainly home-market oriented. Gradually, the Indian manufacturer and exporter is coming to realize vast export potential of plastics not only for meeting utility needs but for industrial purposes. Since plastic is an inexpensive substitute for metal, the scope for production of plastic items for export is indeed immense.

The domestic exporter is currently offered the facility of raw material supply at international prices. This became necessary as the price of indigenous plastic raw materials is higher than that of imported raw materials. The scope of the raw material scheme has been recently extended to cover most of the major plastic raw materials produced indigenously.

SYNTHETIC DETERGENTS AND EXPORT TRADE

The Indian industry exports increasing quantities of synthetic detergents every year. About 3.4 million kg. of synthetic detergents were supplied overseas in 1971-72 to fetch Rs. 8.35 million. The Soviet Union has in recent years emerged as a major buyer. In 1971-72 that market imported 2.85 million kg. worth Rs. 7.26 million. South Yemen People's Republic, Yugoslavia, Tanzania, Ethiopia and Saudi Arabia are among the other buyers.

In the first five months of 1972-73 (April-August, 1972), the export value of these detergents amounted to Rs. 2.97 million (1183 tonnes) of which USSR alone absorbed worth Rs. 2.73 million (1075 tonnes). Nepal, Afghanistan, Sri Lanka and Japan were among the other importers.

The synthetic detergents industry in India depends on the import of only one major raw material, namely, alkyl benzene. The raw material is allowed to be imported liberally so as to encourage the manufacture of detergents. Total licensed capacity in the industry as at the end of 1971 was 85,700 tonnes, and the capacity materialized was 47,580 tonnes. Actual production was 50,000 tonnes, at an estimated value of Rs. 226 million. There are five units engaged in this line of manufacture in the organized sector. As the existing manufacturers and the new entrepreneurs joining the field feel that the demand for detergents in cake form is to go up substantially in the near future, non-indigenous equipment for the purpose is also being allowed to be imported.

IRON ORE AGREEMENT WITH RUMANIA

The Minerals and Metals Trading Corporation of India, New Delhi is to export 2 million tonnes of iron ore to Rumania in 1973-74 under an agreement concluded recently between the two countries.

India is to supply 22 million tonnes of iron ore in all to Rumania over 10 years beginning from 1971. The shipments of the order of 2 million tonnes to be made in 1973-74 compare with 1.6 million tonnes in 1972-73.

Rumania is the second biggest buyer of Indian ore, ranking after Japan. In 1971-72 total exports of iron ore and concentrates from India were recorded at a level of Rs. 1046.96 million. Of this, the share of iron ore alone was Rs. 998.25 million while iron concentrates accounted for a foreign exchange earning of about Rs. 48.71 million.

The country possesses vast reserves of iron ore, having varying ferrous contents. The main varieties are of high grade with 60 to 65 per cent Fe content. Madhya Pradesh, Goa, Orissa, Bihar and Mysore are main iron ore producing states in the country.

The total production of iron ore in 1970 was of the order of 30.78 million tonnes while in 1969, it was 29.57 million tonnes.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

MACHINE BUILDING SECTOR

AN OUTLOOK

Barring certain spheres, India's machine building industry is well established, not only to meet the growing domestic requirements for capital goods and machinery, but to release sizeable surpluses in terms of quantity and knowhow for export trade, according to the recently brought out publication, 'Build Machines Build India' (1972) by the Directorate General of Technical Development, Ministry of Industrial Development.

The future plans for further strengthening the country's machine building sector basically hinge upon four major criteria, namely, meeting the requirements of new projects envisaged; expansion of existing projects; modernisation, renovation and replacement as well as export trade.

The country's Planning Commission has constituted Task Forces for assessing the quantitative and qualitative requirements of machinery and equipment for the various projects expected to come up during the Fifth Five Year Plan period (ending 1978-79). The targets set for 1978-79 envisaged considerable improvement over the Production targets set for the last year of the Fourth Five Year Plan (1973-74) and hence the necessity for increased requirements of new projects in each segment of the machine building sector. The output targets for 1973-74 and 1978-79 for chemical machinery were set at Rs. 275 million and Rs. 350 million; Rs. 120 million and Rs. 220 million for rubber machinery; Rs. 135 million and Rs. 300 million for paper and pulp machinery; Rs. 650 million and Rs. 1000 million for selected machine tools; Rs. 75 million and Rs. 80 million for metallurgical and other heavy equipment; Rs. 20 million and Rs. 40 million for coal and other mining industries equipment; Rs. 450 million and Rs. 600 million for cotton textile machinery; Rs. 190 million and Rs. 350 million for cement machinery; Rs. 210 million and Rs. 400 million for sugar machinery; 20,000 tonnes and 25,000 tonnes for heavy fabricated machinery for fertilizers and chemical industries; 30,000 tonnes and 32,000 tonnes for cranes other than mobile cranes; 1200 numbers and 1550 numbers for crawler tractors and wheeled laders; 30,000 tonnes and 50,000 tonnes for gas cylinders; 450,000 numbers and 625,000 numbers for power driven pumps; 85,000 numbers and 100,000 numbers for commercial vehicles; 210,000 numbers and 350,000 numbers for motorcycles, scooters and mopeds; 1800,000 numbers and 2500,000 numbers for storage batteries; 50,000 numbers and 120,000 numbers for agricultural tractors; 25,000 numbers and 50,000 numbers for power tillers; 1.30 million KW and 2.1 million KW for thermal turbines; 1.30 million KW and 2.1 million KW for power boilers; 6.4 million KVA and 11 million KVA for electric transformers 33 KV and above; 5.5 million KVA and 8 million KVA for electric transformers of 33 KV and below; 0.68 million hp and 1 million hp for electric motors above 200 hp; 2.72 million hp and 4.5 million hp for electric motors below 200 hp; 125,000 numbers and 200,000 numbers for ACSR conductors and 16,000 metres and 20,000 metres for dry core cables.

Some of the above targets that were fixed provisionally may have to be materially altered in view of certain developments. The per capita consumption of electricity in the country increased from 38 KWh during 1960-61 to 80 KWh in 1969-70 and is expected to reach 144 KWh by 1973-74. The electrical manufacturing industry is therefore to be called upon to design, manufacture and deliver equipment for generation, transmission, distribution and utilization of a large block of power of the order of 9.5 million KW in the next five years. In terms of additional equipment, this would correspond to the total equipment that had been installed in the country at the end of Third Five-Year Plan. If a projection is made for the next fifteen years on the basis of past performance only, the electrical manufacturing industry will be called upon to provide equipment for additional capacity of 40 million KW.

In the field of man-made fibres, the total requirements of rayon and synthetic fibres may be reckoned for more than 200,000 tonnes and 105,000 tonnes respectively by 1978-79. The estimated requirements of these fibres by 1983-84 are 300,000 tonnes and 160,000 tonnes respectively. India's current production of man-made fibres being only of the order of 120,000 to 128,000 tonnes per year (mainly in cellulosics), a substantial growth rate will have to be stepped up in this line of manufacture also.

In view of the fact that large quantities of newsprint, dissolving pulp, (long fibre chemical pulp) and paper products are being imported every year involving an expenditure ranging between Rs. 250 to 350 million, the domestic production of paper and newsprint machinery will also have to be improved upon.

Aside from the future requirements of capital goods and machinery needed for new projects, there will also be necessity for increasing their availability for expansion of existing projects as well as modernisation and replacement purposes. Also the encouraging trend in export trade for a variety of machine building industries is bound to reflect in the ever increasing necessity for domestic production and diversification in the line.

Thus domestic demand for basic machinery in India is certain to receive a new dimension in the near future and hence the various programmes for their development.

INDIGENOUS EQUIPMENT FOR FRIGATES

A Gun Control System, manufactured by M/s. Bharat Electronics Limited (BEL), Bangalore, will soon be fitted to India-made ship, INS Himgiri. The equipment was recently handed over to M/s. Mazagon Dock, Bombay.

BEL has recently undertaken the production of Naval Electronic Equipment and systems. Its range of production includes, long range air warning radars, combined warning and target indication radars, surface research and navigation radars, digital display systems for action information, missile control and radar systems, gun control and radar systems and auxiliary equipment.

These electronic equipment are required for the multi-purpose leander class frigates, presently being built by the Mazagon Dock, Bombay. The value of electronic equipment required for each frigate is estimated to be over Rs. 30 million. The BEL is expected to deliver three weapon control systems-two for missile control and one for gun control for INS Himgiri by mid - 1973. Of the total estimated cost of Rs. 15 million of these three systems, the foreign exchange saving content has been calculated at Rs. 7.5 million, representing about 50 per cent of the total cost.

It is estimated that the proportion of foreign exchange saving would be about Rs. 15 million, out of the total cost of complete frigate, which has been estimated at Rs. 30 million. The fourth frigate, when built, will have all the equipment, manufactured by BEL. The next step towards further indigenisation will include the production of antennae of radar sets.

INDIA PRODUCES HIGH-GLOSS PAPER AND BOARD

A high-gloss, cast-coated paper and board is to be manufactured for the first time in India.

An estimated demand of 50,000 metric tonnes per year of these products, used for high-fidelity reproduction, special decorative printing, packaging labels and display specialities is, at present, being entirely met through imports.

Besides meeting the country's demand, the proposed output will even be able to capture a substantial market in West Asia, South East Asia and Far East, it is stated. The entire project is to cost about Rs. 11 million.

Trial production of these products is expected to begin by November this year to reach the consumers by end December.

METHOD FOR COLOUR PREDICTION WOOL DEVELOPED

For the first time in India, the method for colour match prediction on wool has been recently developed by the Wool Research Association, Church Gate Chambers, 5, New Marine Lines, Bombay-20. Such a technique with the use of digital computers has already made strides abroad.

Under the technique now developed in India, three factors govern the accuracy of prediction, namely, the use of a theory which links up appearance to colour with concentration of dyes on material, correct objective measurement of colour and variations involved in the dyeing process which influence concentration of dyes on the material. Among the advantages of the new development to the industry will be to reduce the inventory of dyes, offer alternative recipe if one or two dyes used in the standardised recipes are not available, offer a wide choice of recipes to match shades in their normal range so that a dyer can choose the most economical one, correcting off shades by redyeing and reduce time for laboratory pot dyeing of new shades. The beneficiaries of the new technique will be the textile mills and the paint industry in the country.

ONE THOUSAND OIL WELLS DRILLED

With the drilling of two more oil wells in Gujarat in January 1973, India's Oil and Natural Gas Commission (ONGC) has reached the 1000 mark in oil wells since it began its drilling operations at Jwalamukhi in 1957. Nearly half of these have been drilled in the last six years.

During 1972 alone, the ONGC was able to discover some new oil and gas bearing areas in Gujarat and Assam. In Gujarat where drilling operations were extended to 72 structures, oil was discovered last year in Dabka, Linch and Indrora areas and gas in North Balol. In Assam some new oil bearing horizons were found during last year in Lakwa area. Many more exploratory wells are, however, to be drilled to determine reserves that will be available from these oil strikes.

Besides the 72 structures in Gujarat, drilling operations have been extended during last fifteen years to 12 structures in Assam, 1 in Tripura, 3 in Uttar Pradesh, 5 in Punjab and Himachal Pradesh, 2 in Bihar, 5 in Rajasthan, 9 in Tamil Nadu and Pondicherry and one each in West Bengal, Jammu and Kashmir. The total number of structures taken up for drilling thus comes to 112. Of these, 100 have already been tested, out of which 27 have been found oil bearing and four gas bearing.

The Commission is now getting ready to shortly launch a five year programme of oil exploration to add 64 million tonnes of crude to country's present oil reserves of 120 million tonnes. It will also undertake shortly drilling in offshore Bombay high Area, utilising floating platform that has now been completed in Japan. Prospects for finding oil in coastal areas of Gujarat are also reported to be good and geologists and geophysists were examining volcanic traps in these areas.

Total refining capacity available in the country at present is about 20 million tonnes. Of these, the five refineries in public sector account for a production of 11.6 million tonnes. The four private sector refineries have a capacity of 8.20 million tonnes.

RUPEE APPRECIATES AGAINST DOLLAR

The Government of India have decided to maintain the Rupee's paritv with Pound Sterling at Rs. 18.967 fixed in December 1971 (or Rs 18.80 at which the Reserve Bank has been dealing in accordance with 2.25 per cent margin permitted by the International Monetary Fund.)

The Rupee vis-a-vis the U.S. Dollar has, however, appreciated since its devaluation accounted recently. Before the dollar was devalued, the exchange rate with the rupee was Rs. 7.90 : it is now Rs. 7.61, implying an appreciation of the rupee vis-a-vis dollar by 3.7 per cent.

Before the dollar was devalued, the London rate was £ 1 = $ 2.38, less than $ 2.35 towards the end of January).

After devaluation of Dollar, it is : £1 = $2.47, an appreciation by 3.7 per cent. The rupee which remains linked to the floating £ - has shown a similar appreciation. The impact of dollar's devaluation is that much less.

In other words, the Indian Government feels that the change in the dollar-pound rate is important enough for this country since most trade contracts are expressed in the two currencies (aside from rupee trade with East Europe) – and yet no change in India's position is called for.

Calculations are that trade will not be affected much and it is expected that exports competing with yen, Deutsche Mark and Swiss franc should benefit since these currencies have appreciated in relation to the pound and the rupee.

India's foreign exchange reserves position also remains unaffected by dollar's devaluation since only 4.80 per cent (or Rs. 340 million) are in dollars, it is learnt. (The country's foreign exchange reserves amounted to Rs. 7130 million). This means that over the past few months, the Reserve Bank has been shedding the dollar - which once constituted a third of India's reserves - in favour of such currencies as the Deutsche Mark, the Swiss franc and the Japanese yen. Reserves in these currencies have gone up to a relatively large 17.22 per cent and those in sterling are now 25.57 per cent. Gold and SDRs are 51.53 per cent (or Rs. 7129.9 million).

TRAINING FOR AGRICULTURAL KNOW-HOW

As a follow up to the Third Asian International Trade Fair held in New Delhi, an International Course in agricultural and allied disciplines was recently arranged by the Government of India for participants in the Fair. The course was attended by 12 trainees from Bhutan, Malaysia and Thailand.

The course was a part of India's effort to share her agricultural know-how with developing countries and was arranged in persuance of the Government's decision to structure specialised coarses and provide training facilities to selected participants in the Fair in various facets of the Green Revolution and related activities. In fact, it was visualised that 100 participants from developing countries of Asia, Africa and Latin America would be taking part in training course programme. Of these 100, it was envisaged that 50 would represent high level functionaries such as policy makers, administrators or planners, and the remaining 50 would be middle level functionaries directly connected with implementation of agricultural and allied production programmes.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

MATERIAL FOR CONTROL OF GOITRE

A process for the electro-chemical production of potassium iodate, finding wide application in the manufacture of iodiseal salt which is used for the control of goitre, has been developed by the Central Electrochemical Research Institute (CERI), Karaikudi. Potassium iodate is also used in analytical field and Malaprude reaction.

At present, there is no production of this compound and the entire demand is met through import.

The electrochemical production of potassium iodate can be carried out from an aqueous solution of iodine in sodium hyroxide or potassium hydroxide. Either platinum or electrodeposited lead dioxide on graphite and/or carbon or magnetite can be used as anode. The usual practice of adding potassium dichromate in the electrolyte is avoided by the use of stainless steel cathodes covered with asbestos fibre. The process consists of dissolving iodine in caustic potash solution, oxidation of the iodide to iodate, coating of the cell product so as to crystallise, filtering of the potassium iodate and recycling the mother-liquor to cell feed.

Based on the bench scale investigation, a large scale laboratory experiment capable of producing

250 g of sodium iodate per charge was run several times using platinum anode. It was observed that the results are reproducible on large scale trials. The product obtained is 99.99 per cent pure.

The main raw materials required in the process are pottassium hydroxide and iodine, of which Iodine will have to be procured through import for the time being.

LITHIUM BEARING MINERAL EXPLOITED

A process for the production of lithium carbonate from lepidolite or lithium mica, which is the only lithium bearing mineral available indigenously, has been developed by the Central Glass and Ceramics Research Institute (CGCRI), Calcutta. During the process, another lithium chemical, called 'Lithium flouride' is obtained as a by-product. The newly developed process is significant as both these chemicals used in ceramics, glasses and enamels are at present procured through import.

Optimum conditions for the production of technical grade lithium carbonate and flouride have been worked out on a laboratory scale and utilisation aspects of the process have also been studied. The process comprises, in brief, of the four steps, viz : sintering of lepidolite mixed with other reactive substances; leaching of the lithium salts from the gangue; separation of most of the lithium in the form of lithium carbonate and recovery of residual lithium in the form of lithium flouride.

Lepidolite, the major raw material and other materials used in the process are indigenously available in plenty. According to the Atomic Energy Department of India, the available reserves in the country, even down to only shallow depths would be of the order of 10,000 tonnes so that the reserve could be very much exceeded. No precise assessment of the reserve of lepidolite has, however, been made.

The major items of plant and equipment required for the commercial development of the process are jaw crusher, hammer mill, pulveriser, batch mixer, pelletising machine, filter press, evaporator, centrifuge, blunger, sintering furnace and drying chamber. All these can be fabricated indigenously.

PLASTICISER FOR PHOTO FILM INDUSTRY

The Regional Research Laboratory (RRL), Jorhat, has successfully developed a process for the production of Triphenyl Phosphate which is an important plasticiser used in photo film industries as well as Tricresyl phosphate which is closely related to triphenyl phosphate and used in plastic and synthtetic film industries.

In the process, triphenyl phosphate is produced by reacting phenol with phosphorus oxychloride. Cresyl paphhoset likewise prepared by substituting cresol mixture from coke ovens in place of phenol. The reaction gives 80-85 per cent yield of triphenyl and tricresyl phospate. The process has been standardised on 1 kg. batch scale. The product prepared by RRL has been tested by M/s. Hindustan Photo Film, Ootacamund and found satisfactory.

According to the available information, at present these compounds are not being manufactured indigenously and the entire requirement is met through imports. The requirement of tricresyl phosphate is estimated at 300 tonnes per annum.

The major raw materials required for the manufacture of these two compounds are phenol, cresol mixture and phosphorus oxychloride. Phenol is manufactured indigenously by a few manufacturers while cresol mixture is available in adequate quantities as coke oven by-product. Phosphorus oxychloride is also being produced indigenously.

The main items of plant and equipment required in the process are glass lined reaction vessel, porcelain condenser, thermic fluid boiler, vacuum pump, crystalliser, drying oven and heat exchanger. All these can be indigenously fabricated.

COMPOSITION OF INDIA'S EXPORT TRADE

(In million rupees)

Export Product	**1970-71**	**1971-72** (April-August)	**1972-73** (April-August)
Fish and Fish Preparations	413.90	127.90	232.00
Meat and Meat Preparations	13.80	4.75	5.75
Cereal and Cereal Preparations	71.65	29.55	228.25
Fruits and Vegetables	**703.50**	**336.65**	**375.90**
a) Fresh Fruits and Nuts	634.70	304.90	343.30
b) Fruits Preserved and Fruit Preparations	18.35	11.20	17.35
c) Vegetables	32.70	12.45	8.25
Sugar and Preparations and Honey	309.50	208.55	82.25
Coffee	220.70	139.70	133.85
Tea and Mate	1563.10	567.40	576.00
Spices	361.75	135.00	100.45
Feeding Stuff for animals	439.65	200.55	259.80
Unmanufactured Tobacco	422.45	298.95	384.00
Tobacco Manufactures	28.35	14.90	16.20
Textile Fibre and Waste	370.95	107.80	171.50
Metalliferous Ores and Metal Scraps	1210.35	451.70	385.10
Crude Animal and Vegetable Materials	471.20	197.50	224.75
Petroleum and Petroleum Products	68.60	26.60	52.30
Fixed Vegetables, Oils and fats	71.60	32.70	33.60
Chemical Elements and Compounds	**72.30**	**31.00**	**35.80**
a) Organic Chemicals	33.20	14.75	13.90
b) Inorganic Chemicals	39.00	16.25	21.88
Dyeing, Tanning and Colouring Materials	54.50	19.70	34.50
Essential Oils and Perfume Materials	86.40	33.80	42.35
Leather and Leather Manufactures	907.65	350.90	595.15
Rubber Manufactures	76.60	27.00	33.55
Paper and Manufactures	29.40	15.40	16.60
Textile Yarn, Fabrics and Related Products	**4260.70**	**1567.75**	**1849.00**
a) Jute Manufactures (excluding twist and yarn)	2632.90	994.30	1137.50
b) Cotton Manufactures (excluding yarn and thread)	1000.40	338.55	415.75
c) Textile Yarn and Thread	280.35	95.20	137.60
d) Floor Covering and Tapestries	197.70	73.50	97.70
e) Woven Textile Fabrics	135.95	61.25	53.55
Pearls, Precious and Semi-precious Stones	515.15	185.00	285.35
Glass and Glassware	14.45	5.90	9.50
Iron and Steel	407.70	217.95	189.85
Non-ferrous Metals	79.80	32.70	30.25
Metal Manufactures	236.60	114.85	121.85
Machinery other than Electric	241.60	116.20	111.40
Electrical Machinery, Apparatus and Appliances	186.75	83.20	97.95
Machinery & Transport Equipment	**279.80**	**102.85**	**95.45**
a) Railway Vehicles	69.40	26.25	9.45
b) Road Motor Vehicles	119.80	47.45	46.10
c) Road Vehicles other than Motor Vehicles	73.20	23.60	33.50
Clothing	350.55	132.90	246.75
Footwear	117.60	46.80	48.20
Scientific, Medical, Optical, Measuring and Controlling Instruments and Apparatus	16.50	6.16	9.50
Developed Cinematographic Films	50.15	23.45	22.25
Total including other items	**16066.15**	**6375.25**	**7597.70**

Source : Department of Commercial Intelligence and Statistics, Calcutta.

DESTINATION OF INDIA'S ENGINEERING EXPORTS

The industrial economy of India has come to carve a notable position in the world map of engineering product exports. The engineering segment constitutes a leading area of export growth among non-traditional products. Today more than 100 countries import India's engineering products ranging from simple manufactures to sophisticated machinery and equipment. From the level of Rs. 850 million in 1968-69, the export value of this sector continued to rise year after year-Rs. 1064 million in 1969-70, Rs. 1166 million in 1970-71 and Rs. 1260.40 million in 1971-72, according to the Engineering Export Promotion Council, Calcutta.

The Asian continent absorbed as much as 47 per cent of the total of engineering exports in 1971-72. The African region contributed 27 per cent to the total export in the year. One-fifths of the export earning was due to purchases by both the East and West European markets. Although the Asian region continues to be the prime buyer of these products, the intake of developed countries of Europe and America has also been witnessing gradual improvements for these years. For instance, West European markets purchased worth only Rs. 41.40 million in 1968-69 while in 1971-72 they imported worth Rs. 115.50 million. Equally impressive was the raise in the intake of East Europe which imported worth Rs. 100 million in 1968-69 while in 1971-72 their purchases increased to Rs. 131 million.

In the Asian region, South East Asia imported worth Rs. 330 million in 1971-72. In 1968-69, its imports were of the order of Rs. 246 million. In these comparable years, the West Asian imports grew from Rs. 223 million to Rs. 258 million while those of Africa more than doubled from Rs. 160 million to Rs. 341 million.

In West Europe, the U.K. market has indeed been the best. Her imports rose from Rs. 19.64 million in 1968-69 to Rs. 43.13 million in 1971-72. In the latter year, the major purchase was in respect of handtools and small tools (Rs. 6.5 million), radios and parts (Rs. 5.6 million), auto and auto parts (Rs. 3.7 million), office machinery (Rs. 3.6 million), fire arms of sports (Rs. 2.04 million), machine tools (Rs. 2.3 million), E.P.N.S. ware (Rs. 1.35 million), builders' hardware and locks (Rs. 1.82 million) and MS pipes, tubes and fittings (Rs. 1.10 million). In addition, a wide range of other products figured prominently in the U.K's import list of India's items and they included iron and steel goods; aluminium sheets, circles and foils, cutlery and stainless steel utensils, sewing machines and parts, industrial machinery, particularly jute and textile machinery, knitting machinery, moulding machinery, asbestos cement plant and machinery and cinematographic machinery, storage batteries, abrasives and grinding wheels, electric control gears, switchgears and transformers, bicycles and parts and train lighting and railway signalling equipment.

Next in importance to U.K. has been Federal Republic of Germany; its imports rose from Rs. 7.46 million in 1968-69 to over Rs. 34.3 million in 1971-72. The leading category of increased German import from India relates to auto parts. The market imported these parts worth only Rs. 2.3 million wayback in 1968-69 and Rs. 11.2 million in 1971-72. Electric control gears, motors, switchgears and transformers constitute another area of export progress to the market. Their import of these products was negligible in 1968-69 while it was of the order of Rs. 6.2 million in 1971-72. In addition to these categories, the West German buyer evinced increasing interest for a variety of other products from India and they include handtools, steel pipes, tubes and fittings, builders' hardware, radios and parts, chemical plants, sugar plant and machinery, electrodes and welding equipment, railway wagons components, diesel engines and parts; machine tools, electric wires and cables, forgings and dry and storage batteries.

While the British and West German markets accounted for two-thirds of total engineering exports from India to West Europe, (1971-72), other markets in the region also registered impressive trends of growth in their intake. In 1968-69 and 1971-72, the import value of Belgium, was Rs. 0.44 million and Rs. 1.44 million respectively; France imported Rs. 2.16 million and Rs. 8.52 million worth. Netherlands recorded a far more growing trend from Rs. 4 million to Rs. 10.7 million. Italian purchases rose from Rs. 1.9 million to Rs. 3.3 million. Sweden bought worth Rs. 0.5 million and Rs. 6.1 million in these respective years.

Of East Europe, U.S.S.R's purchases of India's engineering products rose consistently. The market purchased worth only Rs. 9.73 million in 1967-68 while the value rose to Rs. 10.76 million, to Rs. 23.33 million

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and Rs. 49 million in the subsequent three years. The Soviet Union increased its imports of electric wires and cables from a level of Rs. 1.6 million in 1967-68 to Rs. 3.10 milllion in 1968-69, Rs. 10.56 million in 1969-70 and to Rs. 26 million in 1971-72. Storage batteries also figured prominently in the Soviet Union's import list of engineering products from India (they fetched Rs. 8.2 million in 1971-72). Surgical and medical instruments, handtools and small tools, wire ropes and E.P.N.S. ware were the other specific lines of export growth from India to that market.

Bulgaria bought in 1971-72 worth Rs. 7.8 million-comprising among others, wire ropes and other wire products, aluminium foils and automobiles and auto parts); Czechoslovakia Rs. 12.45 million (handtools, small tools, oil engines, sanitary machinery and fittings and builders' hardware); German Democratic Republic Rs. 10.4 million (mainly knitting machines, builders' hardware and locks, electric wires and cables, dry and storage batteries and surgical instruments); Hungary Rs. 16.87 million (railway wagons, worth Rs. 13.73 million and C.I. products as well as handtools and small tools); Poland Rs. 4.5 million (mainly railway wagons and components, textile machinery and automobile products); Rumania Rs. 1.8 million (copper rollers, handtools and small tools); and Yugoslavia Rs. 28.24 million (mainly automobiles and auto parts, wire ropes and other wire products, bicycle parts, electric wires and cables, sewing machines and parts, machine tools and electric measuring and controlling equipment).

The United States purchased India's engineering products worth Rs 39.8 million in 1971-72. As in the case of European countries, handtools and small tools constitute a major segment of her import at about Rs. 9 million in the year. Iron and steel castings were bought to the tune of Rs. 4.9 million, E.P.N.S. ware Rs. 3.3 million, M.S. pipes and fittings Rs. 2.8 million, wood screws Rs. 1.7 million, bicycle and parts Rs. 2.7 million and E.P.N.S. ware Rs. 3.3 million. In addition, India-made steel structurals including transmission line towers have been active in the American market (their export value in 1971-72 was only of the order of Rs. 4.43 million in the earlier year, Rs. 7.4 million in 1970-71 and Rs. 11.54 million in 1969-70. Scientific instruments, bright steel bars and shaftings, forgings, builders' hardware. sanitary fittings, machine tools, auto parts and tractor parts are among the complex varieties imported by the US from India.

The Latin American region despite distance and inadequate direct shipping facilities has also improved its intake of engineering products from India particularly for handtools and small tools, fire arms of sports, mechanical pumps and machine tools, sewing machines and parts, wire ropes, cinematographic machinery and bicycles and parts.

Coming to the traditional Afro-Asian markets, Iran happens to be the foremost importer. In fact Iran is the best market for India's total exports in engineering products. Her purchases were of the order of Rs. 102 million in 1971-72. In that year the major products of supply were electric wires and cables (Rs. 40 million), transmission line towers and poles (Rs. 23 million), railway track material (Rs. 4.8 million), M.S. pipes, tubes and fittings (Rs. 5.53 million), bicycles and parts (Rs. 6.53 million), diesel engines and parts (Rs. 2.9 million), radios and parts (Rs. 2.3 million), bright bars and shaftings (Rs. 2.13 million) and railway wagons and components (Rs. 2.3 million).

Next to Iran, Arab Republic of Egypt is the leading importer of India's engineering products in Asia and the world alike. Its import value at Rs. 100 million could have been far more, but for certain problems that arose in the operation of mutual trading arrangements in the year. In 1970-71, the Egyptian market absorbed worth Rs. 162 million of India's products. As in respect of Iran, the ARE also imports a surprising range of items, the major ones being jute and textile machinery, auto and auto parts, steel structurals, railway track materials, cement mixers, air compressors, electric control gears, electric wires and cables, radios and parts, sewing machines and lifts, tractors and parts and forklift trucks.

In the South East Asian Region, Malaysia including Singapore, Sri Lanka, Nepal, Thailand, Burma, Australia, Hong Kong, Indonesia and Bangladesh are important importers of the engineering products from India. In the African continent whose imports rose from Rs. 160 million in 1968-69 to Rs. 340 million in 1971-72, Sudan leads the list followed by Nigeria, Uganda, Tanzania and Zambia. ☐

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TOILETRIES AND COSMETICS ON EXPORT FRONT

Of India's total export trade in essential oils, perfume materials and toiletries worth over Rs. 86 million, a single firm, M/s. Tata Oil Mills Company Limited, 24, Bruce Street, Fort, Bombay, contributed as much as Rs. 30 million in 1971-72.

The lists of products exported by the firm and their overseas markets are equally extensive. The range of items that the firm trades in includes laundry soaps, detergents, toilet soaps, edible products such as hydrogenated oil (Vanaspati), fruit products including jams, marmalades, squashes, syrups, ketchups, sauce, canned fruits and fruit juices, vegetables, protein foods, high-protein beverages, ground-nut deoiled meal and copra cake, treated cashew shell liquid and marine products. The firm's importers abroad range from Japan in the East to U.S.A. in the West.

The export evolution of the firm makes an interesting reading. Wayback in 1967-68, the foreign exchange that they secured was Rs. 13.3 million. Since then it registered consistent increases - Rs. 15.2 million in 1968-69, Rs. 18.4 million in 1969-70, Rs. 20.3 million in 1970-71 and Rs. 30 million in the subsequent year.

The firm's bath soap under the brand name 'Hamam' has proved extremely popular in the African markets. Its toiletries and cosmetics are eagerly sought by West Asian and South East Asian countries. Japan, U.S.A. are the acknowledged markets for their treated cashew shell liquid. They have also undertaken substantial exports of marine products, particularly to U.S.A.

M/s. Tata Oil has recently entered into a joint venture in Malaysia. UNI-TATA SDN BERHAD, the Indo-Malaysian joint venture, has already gone on production stream.

The firm has been presented the best exporter award in cosmetics and toiletries in the year 1970-71 by the Basic Chemicals, Pharmaceuticals and Soaps Export Promotion Council, Bombay.

India's total export value in the line stood at Rs. 86.38 million in 1971-72, as against Rs. 71.27 million in the preceding year. Essential oils, perfume and flavoured materials constitute the foremost category having fetched Rs. 39.26 million in 1971-72. Sandalwood oil brought in Rs. 26 million, lemon grass oil Rs. 8

million, palmarosa oil Rs. 2 million and other natural oils Rs. 2.85 million. U.S.A., France, U.S.S.R., U.K., Switzerland, Japan and Sudan were among the major buyers of sandalwood oil. U.S.S.R., U.K., Australia and German Democratic Republic were the major purchasing countries of lemon grass oil. Sudan, U.S.A. and Federal Republic of Germany were among the markets for natural oils while U.S.A., France, Federal Republic of Germany, U.K. and Sudan were the leading destinations for palmarosa oil.

Lavender oil, keora oil, ginger oil, eucalyptus oil, clove oil, cinnamon leaf oil, cedarwood oil anise oil, patchouli oil, peppermint oil, sandalwood oil, vetiver oil and oil of spices were the other products exported in the line.

Synthetic flavour perfumes earned as much as Rs. 0.35 million. Rose water, aqueous distillates, natural perfumes, synthetic essential oils, and aromatic chemical mixtures were the other flavoured material active in the export trade. Sudan, U.S.A., Malaysia, Maldive Islands, Saudi Arabia and Singapore were prominent purchasing markets.

Perfumery and cosmetics, dentifrices and other toilet preparations (except soaps) earned Rs. 31.94 million. Agarbattis was the largest single item which fetched Rs. 14.12 million. U.S.A., Ethiopia, Singapore and Nepal were the leading importers. Cosmetic toilet preparations, spirituous toilet preparations, talcum powders, hair oils, face creams, brilliantines, hair creams, shaving creams, hair shampoos (non spirituous and spirituous), tooth powders, toilet powders, tooth pastes, perfumes containing spirit and eau-de-cologne were the other products active in the line. U.S.A., Tanzania Republic, South Yemen Republic, U.K., Nepal, Saudi Arabia, Singapore, Uganda, Hungary, Fiji Islands, Canada, Czechoslovakia, Malaysia and Kuwait were main destinations for these products.

Soaps, cleansing and polishing preparations was yet another area of export growth. The export value of these products during the year amounted to Rs. 15.18 million. Soaps, synthetic detergents, polishes and preparations were the main items supplied overseas. USSR was the main purchasing country for synthetic detergents while Nepal, Singapore, Malaysia, Fiji Islands, Thailand and USA were the major markets for soaps.

CALCULATORS TO HUNGARY

The export earning of India-made office machines and parts improved to Rs. 21.45 million in 1971-72 from Rs. 19.57 million in 1970-71, registering an increase of Rs. 1.88 million.

Among the various office machines, statistical machines including punchers, verifiers, collators, sortors, reproducers and tabulators accounted for an increase of Rs. 1.75 million in 1971-72. The export earning of these machines was up at Rs. 18.73 million as against Rs. 16.98 million in 1970-71. France with an intake worth Rs. 6.75 million was the major buyer. U.K. was the second leading destination at Rs. 2.82 million, followed by Italy at Rs. 1.34 million and Australia at Rs. 1.12 million. German Federal Republic,

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Netherlands, Belgium, Sri Lanka, Indonesia, Korea Republic, New Zealand and Philippines were the other important buying countries.

The export value of manually operated calculating machines also registered appreciable improvement from mere Rs. 2889 in 1970-71 to Rs. 0.55 million in 1971-72.

The exports of typewriters, however, declined marginally to Rs. 838,821 in 1971-72 from Rs. 941,944 in the previous year. Similarly, the overseas supplies of duplicating machines were lower at Rs. 430,122 as compared to Rs. 920,059 in 1970-71.

Lately, M/s. Facit Asia Ltd., Perugadi P. O. (Via Tiru Vanmayur), Madras, a manufacturer in the line, have secured the third consecutive order worth over Rs. 1 million for supply of their calculators to Hungary. The order has been placed by M/s. Metripex, the Hungarian Foreign Trading organisation for instrumentation.

The output of data processing machines comprising computer hardware, such as, calculators, punches, verifiers, sorters, collators, accounting machines, tabulators, interpreters, reproducers and gang punches was of the order of Rs. 41.4 million in 1971. In 1969 and 1970, it was Rs. 31.8 million and Rs. 30.9 million, respectively. This industry has been developed on the basis of phased manufacturing programme which provides for progressive increase in indigenous content through the development of various components in the country itself. As a result, a large number of components required by the industry are being manufactured indigenously with considerable saving of foreign exchange. The fact that these machinery are being supplied to a large number of European, American and Far East markets, is indicative of their competitiveness in terms of quality and technical finesse. The country is also making strides in the computor industry.

SULPHURIC ACID IN EXPORT TRADE

India's chemical industry exported nearly Rs. 1 million worth of sulphuric acid in 1971-72. In terms of quantity, the export totalled over 1425 tonnes. Abu Dhabi, Sri Lanka, Sudan and Saudi Arabia were among the customers.

M/s. Hindustan Organic Chemicals Ltd. (HOC), Rasayani, District Kolaba, Maharashtra, engaged in the production of basic chemical intermediates has been able to enter the export market with export of Rs. 500,000 worth of sulphuric acid during 1971-72. The company is exploring export possibility for other products also.

Besides sulphuric acid, HOC, is also producing acitanilide meta aminophenol and aniline. During 1971-72 the company successfully commissioned four plants, namely, formaldehyde plant, benzene-hexachloride plant, hydrogen plant and aniline plant. Trial runs of the company's nitrobenzene plant are also in progress while those for five other plants viz. nitrotoluene, dinitrobenzene, monochlorobenzene, nitrochlorobenzene and dinitrochlorobenzene are also. contemplated.

There are as many as 67 units engaged in the manufacture of sulphuric acid with a total installed capacity of 1.96 million tonnes as against a total licensed capacity of nearly 3.3 million tonnes per annum. Production during 1971 was of the order of 1.28 million tonnes representing 65.5 per cent utilisation of the installed capacity as against a production of 1.19 million tonnes in 1970.

ELECTRICAL PRODUCTS ACTIVE IN EXPORT TRADE

India stands prominently among the countries manufacturing complete range of electrical machinery and appliances. The industry is not only self-sufficient in the production of these items but is also active in exports. The industry's foreign exchange earning amounted to Rs. 186.75 million in 1971-72 as against Rs. 160.80 million in the preceding year. During the period of the first five months of 1972-73 (April-August 1972) the foreign exchange netted by these items totalled Rs. 97.97 million. During the corresponding period of the preceding year, the export value was Rs. 83.22 million.

Among a large number of manufacturing units in the line which contributed to the export success during 1971-72, M/s. Mysore Electrical Industries, Bangalore, secured foreign exchange valued at Rs. 1.5 million by supplying abroad H.T. switchgears of various KV ranges, L.T. circuit breakers, motor control gears, I.D M.T. Relays and motor protection Relays. Presently, the firm has on hand outstanding orders worth Rs. 55 million at the domestic level. During the first five months of the current year (1972-73), their sales were recorded over Rs. 15 million, outstripping their sales performance at Rs. 11.7 million during the same period of the preceding year (1971-72).

In 1971-72, almost all electrical equipment witnessed sizeable increase. Equipment of distributing electricity constituted the major category which fetched Rs. 54 million as against Rs. 35.65 million in 1970-71, registering nearly 55 per cent increase. Among the leading destinations were U.S.S.R., New Zealand, Singapore, Iraq, Kuwait, Qatar, Iran, Dubai and Arab Republic of Egypt. The next important category witnessing clear uptrend was electrical power machinery and switchgear. The export earning of this group was of the order of Rs. 47.48 million. In the previous year, the exports were at a level of Rs. 44.68 million. The important markets were Arab Republic of Egypt, Singapore, Federal Republic of Germany, Tanzania Republic, Sudan, Nigeria, Sri Lanka, Malaysia, Thailand, Dubai, Indonesia, Australia and Burma. The exports of telecommunication equipment, yet one more category active on export stream, improved from Rs. 27 million in 1970-71 to Rs. 29.92 million in the following year. Among the countries responsible for sizeable intake were Arab Republic of Egypt, Netherlands, Sudan, United Kingdom, Kenya, Ethiopia, Nigeria, and Iran. In addition to these principal categories, other electrical machinery and apparatus group too recorded marginal increase from Rs. 37.33 million (1970-71) to Rs. 39 million (1971-72).

INDIAN MEDICINES TO SOVIET UNION

India's exports of medicinal and pharmaceutical products are witnessing constant uptrend from year to year. During 1971-72 the foreign exchange earning netted by these products was Rs. 87 million as against Rs. 84.65 million in the preceding year, Rs. 60 million in 1969-70 and Rs. 40 million in 1968-69.

In 1971-72, medicaments constituted the leading items of exports, having fetched Rs. 59.50 million, accounting for nearly 70 per cent of the entire export value. Prominent among these are Ayurvedic and Unani medicines, Homeopathic medicines, anti-biotic drugs, antiacid digestive preparations, Asthama, Catarrh and hayfever preparations; chemical, medicinal contraceptive foam tablets, ointment vaccines, gripe water, headache nuralgia pain remedies, tincture iodine, magnesium trisilicate, ointments for burns and cuts, cough cold catarrh and bronchital infections, proprietary patent medicines, botanical drugs and synthetic derivatives. Kenya, U.K., Thailand, Sri Lanka, Australia, Brazil, Japan, Mexico, Nepal, Nigeria, Arab Republic of Egypt, German Democratic Republic, Iraq, Iran, Kuwait, Malaysia, Uganda and Mauritius were the prominent destinations.

The next important group active in the export trade was that of opium alkaloid, quinine, vegatable alkaloid salts and other derivatives. This group brought in Rs. 11.84 million. Salt and other derivatives of quinine fetched an export value of Rs. 4.82 million. U.S.S.R. alone absorbed worth Rs. 3.09 million (13320 kgs). Bulgaria at Rs. 1.34 million (3500 kgs) was the second best market. Czechoslovakia, Singapore and Kenya were the other buying countries. The export earning of other products was : Quinine sulphoid Rs. 7.72 million; vegetable alkaloid Rs. 1.13 million and brucine Rs. 1.08 million. Besides, the category of pharmaceutical goods netted Rs. 4.25 million in the year under review. Among the products supplied abroad in the category, adhesive bandages alone earned Rs. 2.60 million, accounting for more than 50 per cent of export value earned by this category. Adhesive bandages (Rs. 0.65 million), adhesive tapes (Rs. 0.15 million), dental cement for dental filling, plaster of paris, medicated lints, vaslin poultice etc. were the other products active in export. Australia, Sri Lanka, Kenya, Ghana, Jordan, Ireland and U.K. were among the leading markets.

Recently, a sizeable contract was secured by M/s. Sandoz (India), Sandoz House, Dr. Annie Besant Road, Worli, Bombay-18 from M/s. Medexport of U.S.S.R. for the supply of two medicines, namely, Intestopan, a drug for treatment of diarrhoea and dysentery, a tranquiliser valued at Rs. 18 million. The firm is well established as a manufacturer and exporter in the line and have so far exported products such as drugs, chemicals and dyes to East Africa, Japan, Philippines and Switzerland.

Besides drugs and pharmaceutical products, the firm is also manufacturing textile chemicals, dyestuffs and agro-chemicals.

Having more than 2200 units in its infra-structure, India's drugs and pharmaceuticals industry is well established. In the organised sector, there are nearly 100 units and their actual production of drugs and pharmaceuticals in 1971 was of the order of Rs. 3000 million. During 1970, the production was valued at Rs. 2500 million.

EXPORT PERFORMANCE AND POTENTIAL

TRADE ADVISORY COUNCIL MEETS

While addressing the Fifth Meeting of the Advisory Council on Trade, the Minister of Commerce, Prof. D.P. Chattopadhyaya expressed hope that the Fourth Plan target of 7 per cent rate of export growth could indeed be achieved. Although the export trade in the first three years the Plan grew between 5 to 6 per cent, the trends that followed in the subsequent period would reveal the possibility of achieving the target.

India's exports (including re-exports) have witnessed a continued rise since 1966-67. They were valued at Rs. 13,579 million in 1968-69, Rs. 14,133 million in 1969-70, Rs. 15,352 million in 1970-71 and Rs. 160,670 million in 1971-72 (including exports worth about Rs. 380 million to Bangladesh). During April-November 1972, the export value was Rs. 12,393 million against Rs. 10,065 million in the same period of 1971. The import bill in the four years ending 1971-72 respectively was Rs. 19,086 million, Rs. 15,827 million, Rs. 16,342 million and Rs. 18,120 million. During April-November 1972, the import value was estimated at Rs. 10,975 million against Rs. 11,904 million in the same period of 1971. Thus the balance of trade position was favourable at Rs. 1,418 million in the first eight months of 1972-73 while it was adverse to the extent of Rs. 1,839 million in the same period of 1971-72.

Referring to certain policy highlights of the Indian Government in regard to the country's foreign trade, the Minister stated that canalisation had come to say. The policy of canalisation is, however, not an end in itself but the means to achieve a more rational arrangement for organizing imports as also, to some extent exports. It is expected to achieve economy in prices through collective bargaining and bulk purchases. It is also meant to prevent misuses like over-invoicing and under-invoicing, to mop up speculative profits and to reduce inventories. To ensure that the policy of canalisation really has achieved these ends, it would be necessary to modify and re-adapt the policies from time to time. "This is necessary because those persons or institutions whose responsibilities have been substituted by the creation of public sector agencies, are able to recognise that the change in the pattern of management and organization is subserving our larger national interest."

The Minister then referred to another area where the future policy has to be evolved carefully relating to export obligations. Compulsory export mechanisms would have to be devised for selected units or sectors whose capacity to export has been established beyond doubt. Such units or sectors must export a certain proportion of their production. In the case of textiles, a certain element of compulsion was introduced earlier. The Government is now engaged with an examination as to how this principle could be extended to other sectors like the engineering and other allied product groups. Under the existing policy, large industrial units in the selected priority list have to export 5 per cent of their production, failing which they would have to suffer cuts in their import entitlements. As the number of units that have fulfilled the required export obligations is not encouraging, it would be essential to adopt measures for making the obligations very effective. The list of priority industries would also need to be reviewed in the light of changes that had taken place in the economy since the list was drawn initially. For instance, export obligations were not extended to non-priority sector industries earlier. "We are seriously considering a proposal for the imposition of export obligations on industries in the non-priority sector with high import content. It is necessary that they export a part of their production if they are to be permitted to import raw materials from abroad", the Minister stated.

Referring to the mechanism for making available inputs to exporters at internationally competitive prices, the Minister said that certain specific schemes over a period have been evolved and these would need to be further strengthened. He announced that Government was considering the possibility of setting up four to five free trade zones around major industrial belts.

The Minister then placed heavy emphasis on research and development coupled with a concomitant strategy of aggressive marketing and salesmanship. He said that this could be appreciated against the rapidly changing international pattern of trade. "Even in the midst of unpredictable commercial changes, we need to locate predictable areas and pockets on which we can concentrate over a period. It will be one of our important responsibilities, over the coming years, to evolve a viable system of anticipatory planning in our commercial policy in constructive partnership with industry and trade"

TREND IN ENGINEERING PRODUCT EXPORTS

The total exports of Indian engineering goods have been estimated at Rs. 1308 million in 1972. In 1971, the export value was of the order of Rs. 1270 million. The export performance in 1972 is to be viewed against various constraints that were faced by the engineering exporters of India such as shortage of iron and steel, port strikes in the U.S.A. and U.K., international monetary crisis subsequent to Dollar devaluation, deadlock in exports to Arab Republic of Egypt and Sudan due to depletion of funds under mutual trade agreements, restrictions on export to Yugoslavia for squaring off the rupee trade balance by January, 1973 since when the payment between the two countries has been in free foreign exchange and the Indo-Pakistan conflicts in the second half of 1971 and the first half of 1972.

Among the specific products that witnessed growth in exports were bicycles and parts, M. S. pipes and tubes, handtools, small tools and cutting tools, transmission line towers and poles, diesel engines and parts, fabricated steel structurals; paper, cement and chemical machinery, sugar machinery; E.P.N.S. ware, oil lamps and stoves, air-conditioners and refrigerators, water coolers, ice machinery, electric lamps, fluorescent tubes, electrical lamp accessories and appliances, water fittings and sanitary fittings, scientific and surgical instruments, and sewing machines and parts. The exports of these items amounted to Rs. 500 million as against Rs. 386 million in the previous year, thus registering an increase of 22 per cent.

Among the items whose export value registered decline in comparison with the performance in 1971 were auto and auto parts, electrical wires and cables, jute textiles and knitting machinery, electric motors, switchgears, transformers, iron and steel castings, machine tools, dry and storage batteries, radio and components, wire ropes, railway track materials, brass, copper sheets, circles, rods and tubes, railway coaches, loco wagons and parts, office machinery, aluminium sheets, circles and foils, bolts, nuts, rivets and washers, steel furniture, fire arms of sports, telecommunication equipment and telegraphic equipment and tea machinery. The decline in the export value was, however, marginal as the export of the above items amounted to Rs. 1308 million as against Rs. 1314 million, showing thereby a decline of 0.5 per cent.

The export of auto and auto parts registered decline as the supplies to Egypt, one of the biggest markets for India's commercial vehicles, received a setback. Egypt again has been the main market for textile machinery but to avoid concentration of a single market, new avenues for this machinery are being explored. Already large value orders have been secured from Sudan and Libya. Exports to Sudan, however, suffered due to depletion of funds under Indo-Sudan Trade Agreement while exports to East Africa suffered due to political uncertainty in that region. Supplies of iron and steel castings to major markets, namely, Hong Kong, Singapore, East Africa, U.K., U.S.A., suffered due to shortage of shipping space to Hong Kong and Singapore, port strike in U.K., high shipping freight to the U.S. and political and business uncertainty in East Africa. While U.S.A. and West Europe including U.K. have been the main markets of machine tools, high shipping freight and very low prices suffered by the East European countries proved to be the major reason for the decline in machine tools exports. Recent dock-workers strike in U.K. also affected machine tools exports to that country. Shortage of steel has had an adverse effect on the export effort of railway track materials and railway coaches and wagons. The Bulk Import Schemes enforced by the Government for purchasing steel is likely to ease the situation in the near future.

Among the notable turnkey projects received by the Indian engineering industry in 1972 were the supply of cement plant to Iraq and Kuwait and sugar plant to Uganda.

Quite a few new products have been successfully introduced in the export markets in recent times. These new products are thermal boilers, instrumentation, panel for thermal power station, surgical instruments, transmission line towers, cranes, telephone exchanges equipment, helicopter body structures and teleprinters. The Engineering Export Promotion Council, Calcutta, have initiated varied steps to explore new markets for new products. These include formation of exporters' consortia and fixation of floor prices. The Council's Foreign Offices conducted a series of market surveys for different products. In East Asia, for instance, the strategy has been to explore possibilities of maximum participation in public projects, financed by the world organisations and the industrial development projects undertaken by the Governments concerned. The strategy in Europe has been to project the image of industrial India and to promote the export of labour intensive items. In countries like Thailand, Malaysia and Indonesia, the strategy is to create proper image of India as a dependable source of supply of turnkey projects and engineering and consultancy services. Also avenues for increasing export of industrial plant and machinery, transport equipment, industrial refrigeration equipment in particular, are being explored in view of the opportunities created by untying of USAID loans. The Engineering Council deputed a high-powered trade delegation to these countries and on the basis of their recommendations, steps were taken to form a consortium of major sugar mill machinery manufacturers for handling new sugar projects and major expansion key projects in South East Asian countries.

ZARI GOODS AND EXPORT TRADE

A wide variety of zari goods is exported by India. Among them are zari bordered handloom cotton dhoties and sarees, hadloom silk sarees and handloom sarees, zari embroidered brocades, threaded zari and zari goods as artware. In 1971-72, the total export value of zari products amounted to about Rs. 6 million.

Among the varieties supplied overseas, zari bordered silk sarees (over 90 per cent handloom silk) fetched Rs. 2.7 million. These were mainly exported to Singapore, Kenya, U.K. and Tanzania Republic. Zari goods as artware constitute another significant area of recent export growth. These goods fetched Rs. 2.44 million. Imitation zari goods alone secured Rs. 2.04 million. U.S.A., U.K., Afghanistan were the major buyers, while Iran, U.K., U.S.A., Belgium and Sweden were the main markets for real zari goods.

Zari borders are mainly sought by U.K., Saudi Arabia, German Federal Republic and Singapore. Handloom silk sarees embroidered with real zari which secured Rs. 0.4 million worth of foreign exchange in 1971-72, were exported among others to Lesotho, Singapore, UK, USA, and Fiji Islands. Handloom silk sarees embroidered with imitation zari are equally prominent in export trade and they fetched Rs. 0.6 million in the same year with Singapore, Hong Kong, and U.S.A. as the major markets. Other embroidered zari is mainly in the direction of the U.K. market.

GRINDING WHEELS FOR EXPORT

In the vast array of small tools and handtools exported by India, grinding wheels deserve mention. With five manufacturing units in the line, the installed capacity for the wheels stood at 6120 tonnes in 1971 while actual production far exceeded the capacity at 8166 tonnes valued at Rs. 65.24 million.

The specific varieties of grinding wheels exported are diamond impregnated wheels, wheels of natural stone and grinding wheels of synthetic abrasive grains and other material. In 1971-72, the foreign exchange earned from these varieties totalled Rs. 0.7 million. Diamond impregnated wheels were supplied mainly to Canada, U.S.A. and German Federal Republic. Nigeria, Thailand and Tanzania Republic were the important buyers of wheels of natural stone. Thailand, Uganda, Malaysia, Italy, Saudi Arabia, Syria, Bulgaria and Tanzania Republic were among twenty importing countries of grinding wheels of synthetic abrasive grain. Other varieties of grinding wheels were supplied to Japan, Sudan, Nepal and U. K. among others.

MARINE PRODUCT EXPORTS IMPROVE

The export earnings from marine products registered a sizeable rise during 1972 as compared to 1971. The value was Rs. 565.74 million as against Rs. 391.73 million. In terms of quantity, marine product exports stood at 37.3 million kg. against 39.2 million kg., thus indicating a rise in unit value of exports.

Frozen prawns and frozen froglegs were mainly responsible for the increase in exports in 1972. Frozen shrimps continued to be the single largest item of the country's exports.

In 1972, the contribution of frozen prawns was Rs. 495.47 million as against Rs. 313.36 million in the preceding year. Frozen froglegs secured Rs. 21.3 million against Rs. 13 8 million. The export earning of frozen lobster tails improved to Rs. 12.3 million from Rs. 11 million. Among other marine product categories whose export value improved were shark fins, fish maws, shrimp powder, fish pickles, prawn pickles, cuttle fish bones, sea shells, fish meal and tortoise shells. The export of canned prawns, however, witnessed decline to Rs. 19.7 million from Rs. 29.7 million. Dry fish, dry prawns, fish oil, Beche-de-mer are among other marine product varieties supplied overseas.

RISING TREND IN EXPORTS OF GEMS AND JEWELLERY

In the first nine months of 1972 (January-September), the export value of gems and jewellery totalled Rs. 481 million as against only Rs. 310 million in the same period of 1971. The contribution of diamonds was of the order of Rs. 390 million against Rs. 337 million. Next in importance was the category of precious stones which fetched Rs. 75 million as compared to Rs. 61 million. Pearls secured foreign exchange worth Rs. 8.2 million as against Rs. 5.6 million. Gold and jewellery was exported to the tune of Rs. 3.05 million as against Rs. 2.56 million while the overseas supply of non-gold jewellery amounted to Rs. 4.2 million against Rs. 3.6 million.

With a view to strengthening the research and developmental facilities in the jewellery industry, a jewel testing laboratory was inaugurated in August, 1972. This is the first of its kind in India equipped with the most modern instruments.

EXPORT OF SPORTS GOODS RISE

India's sports goods earned Rs. 30 million in 1972 as against Rs. 21.2 million in the preceding year. The export growth was thus of the order of nearly 40 per cent.

An interesting feature of India's exports of sports goods in recent years has been the larger patronage extended to Indian sports goods, especially footballs and tennis rackets, particularly in the developed countries of Europe. A number of European countries also extended sizeable patronage and they appear to be well set to increase their intake from India in future.

The Sports Goods Export Promotion Council, New Delhi, secured on-the-spot business from its participation in exclusively sports goods fair SPOGA-KOLN. The Council's organisation of the Indian Promotion Exhibition at Munich coinciding with the Olympic games enhanced the reputation of Indian products among the competiting sportsmen from different countries.

In early 1972, the United Nations Industrial Development Organisation (UNIDO) deputed a team of foreign importers to visit the sports goods units in India. The visit enabled the UNIDO team to identify India's competitiveness in the export field of several sports goods.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

RAILWAY WAGONS

PRODUCTION AND EXPORTS

In view of an upsurge in demand for railway wagons, the Indian Railways have initiated steps to augment production. The fleet of wagons and locomotives is expected to be increased soon to cope up with the increasing demand for railway transport in the country. Against the country's Five-Year Plan requirements of wagons, 15,000 numbers have been recently ordered over and above 26,000 already on order. Wagon manufacture in the railway workshops at Amritsar, Golden Rock and Samastipur is being stepped up to about 4000 wagons per year. Arrangements have been made with the Indian Statistical Institute for a thorough systems analysis and study of important streams of coal movement to ensure that optimum use is being made of the country's rolling stock and other facilities.

The Indian railways have three production units manufacturing coaches, diesel and electric locomotives. Railway workshops also produce 2800 wagons which will be stepped up to 4000 wagons a year from 1973-74. The Integral Coach Factory, Madras, manufactured an estimated 715 fully furnished coaches as against 635 in the preceding year. The Factory is expected to produce 750 coaches in 1973-74. The production of diesel locomotives in Diesel Locomotive Works, Varanasi and that of electric locomotives in Chittaranjan Locomotive Works are expected to be improved soon. The Varanasi unit is to produce 140 locomotives in 1973-74 as against 110 in 1972-73. The Chittaranjan Works is to step up the production of diesel shunters upto 128 numbers and that of electric locomotives to 109 numbers in 1973-74.

On the export side, the Integral Coach Factory have achieved a breakthrough recently by securing orders abroad in the face of stiff international competition. Presently, the undertaking have orders to export coaches to Zambia. An immense potential awaits India's railway equipment including coaches, locomotives, wagons and signalling equipment to the developing countries of Asia, Africa and South America. The wagons are also in great demand in U.S.S.R. and other countries of Eastern Europe. A Special Export Cell is to be formed in the Railway Board so as to ensure that the best of export opportunities may be reached, stated Shri L.N. Mishra, Railways Minister while introducing the railway budget for the year 1973-74.

Over the years, the Indian Railways have also developed consistent know-how and expertise in the construction of railway lines for difficult terrain (mountainous) with long tunnels and high viaducts, building of long span bridges with deep and heavy foundations in giant rivers like the Ganges and Brahamputra. The Indian Railways have also developed an integrated organisation for research, design and standardization as a substantial base to advance the indigenous industrial manufacture of all railway equipment, rolling stock and track. They are acting as consultants and advisers to a number of countries in Asia and Africa. In view of the demand abroad for such consultancy services, the Indian Government are proposing to organise a separate unit for consultancy services in the Railways, so that the services can be rendered economically attractive to foreign clientele. Aside from offering consultancy services in all fields of disciplines including management and computerisation, project evaulations after detailed field surveys etc., the Indian Railways can also undertake turnkey execution of railway projects abroad.

In his budget speech, the Minister indicated that the Indian Railways might be called upon to carry an increase in freight traffic of 110 to 120 million tonnes in the five years to come or an average growth of 22 to 24 million tonnes per year. Such an increase can be appreciated against the average yearly growth of 5 million tonnes in the First Five-Year Plan, 8 million tonnes in the Second Plan and 4 million tonnes since 1960-61 to date. The projected increase in traffic in the Fifth Five-Year Plan (1979-80) will largely be in basic commodities such as coal, raw materials for steel plants, foodgrains, fertilizers, Cement, Iron ore for export, petroleum products and steel. On present indications, movement of coal alone would be about 125 million tonnes as against 65 million tonnes at presenst - an increase of unprecedented magnitude for any railway system in the world. Likewise, passenger traffic is expected to grow substantially. To cope with such a task ahead, the fleet of locomotives, wagons and coaches is to be augmented in a big way, new lines are to be constructed, the capacity of existing lines is to be increased, and new repair and production units are to be stepped up. Additional passenger terminal and yard capacities at metropolitan centres and other cities are to be provided. These challenges are proposed to be fully met, stated the Minister.

CERAMICS AND REFRACTORIES

A REVIEW

The ceramics and refractory industry in India has accepted the challenge of modernity. Blending the artistic heritage of the country with novel designs and special artistry, the industry covers today a wide range of products such as refractories white-ware, glazed tiles, H.T. and L.T. insulators, sanitaryware, crockeryware, stoneware pipes and earthenware containers.

With 43 recognised units in production, the *refractories* industry has an annual installed capacity of over one million tonnes (1971). The actual production was of the order of 785,000 tonnes. The refractory units are gearing up to meet the rising demand of consuming industries, particularly steel through the installation of balancing equipment. The new items produced for the first time in 1971-72 were zircon nozzles and dense magnesite bricks. Refractory products are active in export trade. Their export value in 1971-72 totalled about Rs. 1.05 million. Fire-clay bricks and shapes, silica bricks and shapes, magnesite bricks and shapes, high alumina bricks and shapes, graphite crucibles, silicon carbide crucibles and other refractory products figured in the export list. While Sri Lanka, Iran, Kenya, France, U.K., Arab Republic of Egypt, Malaysia, Thailand and Yugoslavia were the importers of refractory products and refractory construction materials, Malaysia and Sudan were the other importers of silicon carbide crucibles and graphite crucibles. U.K., Iran, and German Federal Republic were among the significant importers of non-construction refractory products.

The installed capacity for *HT and LT insulators* was 20,560 tonnes and 8,800 tonnes respectively in 1971. Seven units in the H.T. insulator line produced 13,640 tonnes and 13 units for LT insulator produced 1420 tonnes in 1971. Though not in large quantities, electrical insulators are being supplied abroad. Porcelain discs and strings, porcelain post and pin insulators and procelain telegraph/telephone insulators were the specific categories exported, mainly to Sri Lanka, Burma, Iraq, Australia and the U.K.

Glazed tiles have an installed capacity of 21,120 tonnes spread over four major units and their total production in 1971 was 20,640 tonnes. While the manufacture of glazed tiles of sizes smaller than 4″ × 4″ is reserved for the small scale sector, additional capacities are being planned by some of the existing units. Non-refractory ceramic tiles have already made a mark in the export field. They earned foreign exchange worth Rs. 0.75 million in 1971-72. Nepal was the major buyer of building bricks as well as roofing tiles. Bahrein Islands, Singapore, Maldive Islands and Kuwait were the other importers of roofing tiles. Glazed ceramic settes fetched Rs. 0.35 million with Sudan, Saudi Arabia, Muscat, Kuwait, Bahrein Islands and Burma as prominent buyers.

Stoneware pipes and containers have installed capacities, in the organised sector of 76,465 tonnes and 6290 tonnes respectively in 1971. The production was estimated at 34,610 tonnes and 5,885 tonnes respectively.

The installed capacity of *crockery* stood at 25,345 tonnes in 1971. Actual production in the year was estimated at 8035 tonnes. Substantial capacity expansion is being planned in this line also.

Sanitaryware constitutes yet another line of importance in the industry. Its installed capacity was 17,080 tonnes in 1971 and estimated production was 14,360 tonnes. The total export of sanitary plumbing, heating, lighting, fixtures and fittings of ceramic materials totalled Rs. 4.86 million in 1971-72. Of this, sinks and wash basins made of ceramic material alone fetched Rs. 1.56 million. Kenya absorbed as much as Rs. 0.5 million while Uganda, Sudan, Mauritius, Nepal, Swaziland, Bahrein Islands, Malawi and Yemen Arab Republic were the other important buyers.

In the *enamelware* industry, the installed capacity in the organised sector was of the order of 30,000 pieces in 1971 and the actual production was 20,745 pieces, valued at Rs. 21 million. Enamelled iron utensils, enamelled iron sign boards and other enamelled ironware were exported besides synthetic enamels and vitrifiable enamels.

Besides, *synthetic stones* were produced to the tune of 24,220 kg. in 1971 and abrasive grains to nearly 3400 tonnes. The manufacture of ceramic colours is also being established.

Pottery exports totalled Rs. 154,700 in 1971-72. Tableware of porcelain or china which fetched foreign exchange worth above Rs. 131,200 was mainly supplied to U.K., Uganda and Nepal.

The total export value of ceramic and allied products during 1970-71 stood at Rs. 10.20 million. It was of an equal magnitude in the subsequent year also.

RUSSIAN INTEREST IN INDIAN RESINS

Some time back a Russian Trade Delegation visited the factory premises of Dr. Beck & Co. (India) Limited, Poona-18. Among the products which aroused the interest of the visitors was an indigenously produced resin meant for use under extremely low temperature conditions. The resin is being exported for the first time by India to a large chemical organisation in U.S.A.

With the advent of synthetic resins and their availability in commercial quantities, the Indian industry has been attempting to use their products in repairing cracks in irrigational dams. For instance, the epoxy resins produced by the Poona firm are being put to use for repairing cracks in Koyna Dam. The resins have been earlier used for certain other major civil engineering applications in Konar Dam, Damodar Valley Corporation, Bihar; Chenani Power House, Jammu & Kashmir; Bhandardara Dam, Maharashtra and Paras Thermal Power Station again in Maharashtra.

It was found that amongst the synthetic resins, epoxy and polyester resins fulfil certain requirements for application in repairing crack concreting and strengthening fissured structures. The Central Water and Power Research Station, Poona conducted laboratory tests to find out the possibility of filling the creaks in concrete structures with epoxy resins. The application of the above firm's epoxy system to the Koyna dam yielded results.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

EXPLOSIVE INTERMEDIATE DEVELOPED

A process for the production of monoethyl aniline which is an intermediate for the manufacture of an explosive 'carbamite', used in the defence, has been developed by the National Chemical Laboratory (NCL), Poona.

The process is significant as presently the country's requirements of this intermediate are met through imports. The annual demand for the product is estimated to be around 150 tonnes.

The process developed by NCL consists of reacting aniline and ethanol in vapour phase in a fluidised lead reactor at elevated temperature. The product is then fractionally distilled. The laboratory investigations have been conducted on 5 kg. per hour scale. Based on this work, a pilot plant of 15 kg. per hour capacity has been set up and successfully operated at the laboratory. The laboratory has standardised working conditions and collected data on the raw material consumption and utilities. The products prepared by NCL has been approved by the Defence Authorities.

The main raw materials required for the manufacture of the explosive intermediate are aniline, ethyl alcohol and catalyst. All these are indigenously available. The main items of plant and equipment, namely reactor, vaporizer, heat exchangers, vacuum distillation unit columns, storage tanks, pumps and filter required for the process are also available or can be indigenously fabricated.

DEVELOPMENT OF VARNISH FOR LEATHER GOODS

The Central Leather Research Institute (CLRI), Madras, has recently made a significant contribution to the leather and leather goods industry with the discovery of urethane varnish from castor oil.

To get the finish required in their products, the leather goods industry at present uses 80 tonnes of top coat lacquers annually, out of which 5 to 10 tonnes is Urethane Lacquers which is being imported. Indian footwear and leather goods being in demand, both locally and abroad, it is expected that approximately 25 tonnes of Urethane varnish may be required annually in the near future.

With the process developed by CLRI, the varnish can be prepared by reacting toludene di iso cyanate and castor oil in a solvent medium (xylene or butyl acetate) in reaction kettles fitted with necessary auxiliary equipment. The process is simple, easily controllable and completed in a period of 4 hours. The leathers finished with this varnish have passed the tests specified by Indian Standards Institute (ISI).

The main advantage of the process is that out of the required raw materials, namely castor oil, xylene and toluedne, the first two are avilable indigenously. Toludene di iso cyanate will, however, be imported for one or two years. The major items of equipment are reaction kettle and anilines which can be easily manufactured indigenously.

For know-how and other details, the National Research Development Corporation of India, 61, Ring Road, Lajpat Nagar III, New Delhi, can be contacted.

MEDICINE FOR LEUCODERMA FROM VEGETABLE SEEDS

The Regional Research Laboratory (RRL), Jammu has developed a process for the manufacture of Xanthotoxin, a medicine for leucoderma, from Ammi majus seeds. Xanthotoxin is an established remedy for leucoderma and it also used extensively in 'Sun-tan' lotions in Europe.

At present, xanthotoxin is not produced in the country and the entire requirement estimated at about Rs. 300,000 to Rs. 400,000 is met by imports. There is considerable export potential for this product.

In the process developed, mixture of coumarins obtained from the Ammi majus seeds is converted into xanthotoxal which on methylation gives xanthotoxin. The laboratory investigations have been conducted on 500 kg. lots of seeds. The yield of the xanthotoxin on seed weights basis is 0.4 per cent The product obtained in the laboratory is a pale yellow crystalline odourless power at 146° - 148°C, with moisture not more than 1 per cent, ash negligible and assay (dried basis) not less than 95 per cent. The product has been already supplied to some pharmaceutical firms to their entire satisfaction.

The main raw materials required for the manufacture of the product are ammi majus seeds, n-hexane, ethyl acetate, solvents, dimethyl suphate, alumina, silica gel and activated carbons. All these are indigenously available. The major items of plant and machinery required are extractors, boiler, pulverizer, stainless steel containers and solvent storage tanks. These can be easily fabricated indigenously.

FOUNDRY CORE BINDER

The National Chemical Laboratory (NCL), Poona, has developed a process for the manufacture of foundry core binder from cashew nut shell liquid. The product is specific for steel foundries for high dimensional accuracy and finish to moulded parts. Because of its inexpensiveness and good performance, it is likely to prove a good substitute for synthetic resin based core, which is in vogue at present. The demand for the product may also grow in view of increasing output of moulded parts of high dimensional accuracy by the steel foundries.

The process consists of polymerisation of cashewnut shell liquid in the presence of catalysts. The work has been conducted on 5 kg. of finished product per batch. The product has been tested by a reputed firm of Poona and has been found to be suitable. Another firm has conducted consumer acceptability trials on the product which was found acceptable to them.

The raw materials for the manufacture of foundry core binder are cashewnut shell liquid, catalysts and sulphuric acid. Except catalyst, all the other raw materials are indigenously available. Catalyst, though imported, is freely available in the market and is likely to be produced in the country in the near future.

The major equipment required in the process is leadlined kettle with bottom outlet and stirring arrangement. This is either indigenously available or can be fabricated easily.

The NCL has assumed 1 tonne per day as the economic size plant. The total capital outlay for a plant of this size has been estimated at Rs. 2,94,000.

DIRECTION PATTERN OF INDIA'S TRADE

(In million rupees)

Region	1970-71	1971-72 (April-August)	1972-73 (April-August)
Africa	**1319.10**	**477.50**	**464.70**
Arab Republic of Egypt	230.50	92.75	136.30
Sudan	517.40	164.10	66.75
Nigeria	98.90	41.55	37.00
Kenya	78.35	33.70	26.80
Tanzania	41.40	25.15	21.05
North America	**3021.95**	**1325.90**	**1337.45**
U. S. A.	2627.90	1160.00	1198.25
Canada	394.00	165.90	139.20
Latin America	**125.80**	**46.10**	**23.40**
Argentina	60.00	23.75	41.00
Other American Countries	**28.00**	**14.50**	**9.50**
ECAFE Countries	**3831.50**	**1593.40**	**1853.30**
Japan	1817.00	680.75	788.70
Bangladesh	380.00	—	328.90
Nepal	284.35	107.30	141.15
Iran	197.45	81.60	131.10
Australia	279.25	122.50	102.80
Hong Kong	154.65	68.20	72.25
Singapore	175.15	71.35	64.65
Sri Lanka	212.10	117.40	39.00
Other Asian and Oceanian Countries	**625.25**	**241.10**	**330.45**
Kuwait	106.85	42.65	61.15
Iraq	97.10	39.80	52.30
Saudi Arabia	111.25	38.00	51.95
East Europe	**3434.80**	**1427.80**	**1821.00**
U. S. S. R.	2086.75	873.65	1181.10
Czechoslovakia	304.50	114.20	179.40
Poland	199.15	59.00	162.00
Bulgaria	154.80	48.10	90.25
German Democrative Republic	179.50	96.95	61.50
Yugoslavia	243.70	112.35	47.15
European Economic Community Countries	**1237.70**	**444.15**	**786.70**
Federal Republic of Germany	367.50	147.25	263.50
Italy	214.50	82.00	163.85
France	241.25	81.10	159.70
Netherlands	147.15	54.00	101.40
Belgium	240.30	79.80	98.25
European Free Trade Association Countries	**1880.00**	**756.00**	**882.10**
U. K.	1680.80	678.00	745.40
Sweden	60.30	18.00	68.00
Switzerland	74.80	32.60	31.50
Other European Countries	**131.20**	**48.80**	**89.30**
Turkey	20.10	6.35	36.35
Ireland	57.85	25.00	30.00
Spain	31.00	8 00	12.50
Total of All Countries	**16015.50**	**6375.25**	**7620.00**

Source : Department of Commercial Intelligence and Statistics, Calcutta.

ECONOMIC SURVEY OF INDIA

Notwithstanding the sluggishness of commodity production, accompanied by a significant increase in monetary outlays on account of unavoidable expenditure on refugee relief and defence efforts and the resultant imbalances between agrregate demand and supply positions, the Indian economy came out of 1971-72 without any serious effect on either the price level or the balance of payments, according to the ECONOMIC SURVEY (1972-73) presented in the Parliament recently. "The task ahead is not going to be an easy one. In order to achieve accelerated economic growth in a framework of greater social justice and self-reliance, it will be necessary to take many hard decisions. However, to suggest that the task is unsurmountable will be to underrate the Nation's ability and will-power to work for its own prosperity".

India's national income at 1960-61 prices increased by 7.3 per cent in 1969-70 over the previous year and by 4.6 per cent in 1970-71. It was of the order of Rs. 1,80,380 million and Rs. 1,88,760 million in these years. Due to sluggish progress of commodity production, the growth rate of national income in 1971-72 has been estimated at about 2 per cent in 1971-72 and about the same in the subsequent year too. In a country like India in which agriculture accounts for nearly one half of national income, fluctuations in national income resulting from the operation of such uncontrollable factors as weather conditions are not unusual. The principal task of planning in the country is to reduce the amplitude of these fluctuations by a progressive diversification of the country's economic structure and also by reducing the dependence of agriculture on rain-fed water. As a result of the rising tempo of development activities, the amplitude of fluctuations in the output of some agricultural products has been considerably reduced in recent years.

Agricultural production rose by 6.7 per cent in 1969-70 and by 7.3 per cent in 1970-71. There was, however, a setback in 1971-72 when production declined by 1.7 per cent. Production of foodgrains declined from 108.4 million tonnes in 1970-71 to 104.7 million tonnes in the year that followed. The output of rice improved from 42.23 million tonnes to 42.73 million tonnes, while that of wheat rose from 23.83 million tonnes to 26.48 million tonnes. Among agricultural crops, the production of raw cotton touched an all-time high of 6.53 million bales in 1971-72 as compared to 4.50 million bales (bale=180 kg.) in the preceding year. The output of jute and mesta estimated at 6.84 million bales increased from 6.20 million bales in 1970-71. However, the production of five major oilseeds declined from 9.26 million tonnes in 1970-71 to 8.28 million tonnes in 1971-72. The output of sugarcane also registered a fall from 12.98 million tonnes to 11.73 million tonnes. Pulses production too fell from 5.20 million tonnes to 5.10 million tonnes.

In order to make up for the declining rate in agricultural production, the Government launched a crash programme for increased output during 1972-73. The objective of the programme has been to achieve an increase in the Rabi (winter) production of an order which would neutralize the loss of Kharif (summer) output. The higher Rabi output was sought to be achieved by augmenting irrigation facilities and through increased supplies of fertilizers, seeds, pesticides and plant protection measures.

The country's industrial production went up by 6.6 per cent in 1969-70 and by 2.5 per cent in 1970-71. In 1971-72, the growth rate was 4.5 per cent. It increased sharply during the first five months of 1972-73 when the industrial production showed an increase of 7 per cent over the level reached in the same period (April—August) of 1971-72. A large number of industries contributed to the acceleration of industrial production. A major part of the improvement was due to higher growth in the production of textiles. Output of mining and quarrying, chemicals, non-metallic minerals, rubber products, non-electrical machinery and transport equipment also expanded significantly. Food industries and metal products, however, recorded a decline. In the case of petroleum products and paper products also there was a recovery. While the total installed power generating capacity increased from 5.66 million kw in 1960-61 to 17 million kw in 1971-72 and the expansion of generating capacity has been so far planned on the basis of an annual increase of 12.5 per cent, the demand seems to be rising at a faster rate. By the end of 1972-73, a capacity of 18.2 million kw is expected to be in operation.

An important factor in the overall recovery of industrial production, particularly in the first half of 1972 relates to better utilisation of capacity. There are a number of industries working close to their capacity as, for instance, in respect of rubber goods, excepting bicycle tyres and tubes and rubber footwear units. A large range of chemical units has reached the level of 90 per cent or more. In fertilizers, urea units are able to utilise about 70 per cent of the capacity. In the electrical equipment group, electrical lamps, fans, house-service meters, room air conditioners, dry cells, storage batteries and heavy items like motors and transformers and aluminium cables are all being produced close to capacity. In non-electrical machinery, high levels of utilisation have been achieved by grinding wheels, plastic working machines, gas welding, cutting equipment and ball bearings etc. Metal products showing a high degree of utilisation include machine screws, wood screws, crowns corks, steel files, hurricane lanterns and hand tools. Broadly speaking, the year 1972 witnessed an improvement in capacity utilisation.

To encourage higher industrial production the Government decided to accord approval in January 1972 for additional manufacturing capacity upto 100 per cent of existing capacity without the formality of an industrial licence provided that the increase was brought about without any import of capital goods. In February 1973, a modified industrial licensing policy was announced under which a consolidated list of industries was published in which the larger industrial houses as also branches and subsidiaries of foreign companies can participate. The list includes core industries of importance to the national economy; industries having direct links with such core industries and industries with a long term export potential. In order to restrict entry of large undertakings in areas that are primarily meant for small, medium and new entrepreneurs, it was decided that the exemption limit from licensing provisions which now applies to substantial expansions and new undertakings upto Rs. 10 million by way of fixed assets would not apply to existing licensed or registered undertakings having fixed assets exceeding Rs. 50 million. The existing policy of reservation for the small scale sector is to be continued under modified industrial licensing policy. While endorsing the creation of joint-sector units on a case by case basis, the new policy specifically declares that larger houses, dominant undertakings and foreign companies would not be allowed to use the joint-sector to enter industries from which they are to be otherwise excluded.

The production of a number of public sector undertakings showed an encouraging increase during 1972. In regard to power generating equipment, for instance, different units manufacturing heavy electrical equipment, recorded increases from 34 per cent to 103 per cent in the first eleven months of 1972 over the corresponding period of 1971. The output of heavy electrical equipment at the Hardwar Plant of M/s. Bharat Heavy Electricals went up by as much as 103 per cent and boilers and boiler components by the firm's High Pressure Boiler plant at Tiruchi by 41 per cent. The output of power equipment by the Bhopal unit of M/s. Heavy Electricals (India) Limited increased by 55 per cent during 1972 as compared to the preceding year. Similarly, the output of various types of cables by M/s. Hindustan Cables Limited went up by 42 per cent to 99 per cent in the year.

India's external payments showed a noticeable improvement in 1971-72 despite the massive strain imposed on the economy's resources by the influx of refugees and the outbreak of war. Foreign exchange reserves which were drawn down to the extent of Rs. 886 million in 1970-71 were built up again to add upto Rs. 1164 million. In 1971-72 the total reserves available were of the order of Rs. 8487 million. The accumulation of reserves was facilitated by the third allocation of Special Drawing Rights (SDRs). India has so far received Rs. 2446 million worth of SDRs. The suspension of U.S. aid in 1971, the continuing uncertainty of the prospects for external assistance, the heavy burden of debt-services (Rs. 4790 million in 1971-72) which currently absorb nearly 30 per cent of the country's export earnings would emphasize the urgent need for effective measures to step up exports and to save on imports. The international monetary system has been in a steady turmoil and this uncertainty has particularly adverse effects on developing countries. The International Monetary Fund (IMF) has set up a Committee of Governors to advise on matters relating to world monetary reform. Along with other developing countries, India, as a member, is taking active part in the deliberations of the Committee. The European Economic Community has been enlarged which will indeed neutralise any beneficial effects on India's exports that might accrue from Generalised Tariff Preferences secured by UNCTAD.

India's exports increased by by 4.1 per cent in 1969-70, 8.6 per cent in 1970-71 and by 2.2 per cent (excluding exports to Bangladesh) in 1971-72. Taking

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into account the exports to Bangladesh the growth rate was 4.7 per cent. Export earnings during 1971-72 amounted to Rs. 16066 million. In the year, traditional commodity exports benefitted from better overseas demand, particularly, jute goods, cashew kernels and tobacco.

On the non-traditional export side, engineering goods fetched Rs. 1184 million in 1971-72 but the factors such of continuing shortage of steel, growing domestic demand, and consequent rise in prices and costs, affected the smooth rate of growth for these exports. Iron ore exports were also adversely affected due to recession in the Japanese steel industry, a major buyer of Indian ore.

The export trade, in general, had to face unfavourable developments within the economy as well as a slow down in the pace of expansion of world trade. The growing pressure on domestic demand, slow growth of industrial output, and continuing shortages of critical inputs like metals and cotton affected the surplus for export. Besides, a series of monetary crises which culminated in the suspension of dollar convertibility and the floating of world major currencies, dampened the flow of imports into industrialised countries and also created uncertainty for exporters from developing economies.

Among the developments in trade policy during 1971-72 was the increased role assigned to public sector agencies. Self-reliance was encouraged both through direct regulation of imports and imposition of additional tariff duties. Other import policy measures aimed at ensuring adequate supplies of imported inputs for expansion and diversification of export production as well as for meeting the requirements of small scale and priority industries. Export programmes and policies are sought to be reoriented from time to time so as to secure the overall annual rate of growth of 7 per cent. Considering past trends, this would no doubt appear to be an ambitious target. However, given a right mix of programmes and policies, it should be possible to significantly improve upon past export performance. This possibility can be noticed from the fact that during the first eight months of 1972-73 (April - November, 1972), rate of growth of exports turned out to be 18 per cent more than the corresponding period of 1971-72, even if export, worth Rs. 516 million to Bangladesh (financed mostly through loans and grants are not taken into account. ☐

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EXPORT ORDER FOR INSTRUMENTATION FROM MALAYSIA

In the ever strengthening chain of export orders received by the industrial firms in India, the one which has been recently secured from Malaysia by M/s. Instrumentation Limited, Kota, deserves mention. The order which is valued at Rs. 15 million has been received against stiff international competition for turnkey provision of instrumentation for a power plant in Malaysia. Even within a short time of its existence since 1967, the Kota firm has made a notable headway, both in terms of product expansion and diversification. The firm today produces eight major categories of instrumentation with over 60 variants. Established with collaboration from U.S.S.R., the company aims at attaining self-reliance in fields of precision measurement and control instruments which constitute the nerve centre of precision plants. Compared to the business secured by the firm at Rs. 4 million in the initial stages (1967), it has secured a total business of Rs. 320 million by the end of 1972.

Over the years of industrialisation, the Indian industry has come to register a constant expansion and diversification of the engineering sector and alongside with it, developed the allied manufacture of instrumentation. Today, the instruments industry in India can be comparable to those in the advanced industrial economies and covers a wide variety such as scientific, optical, surveying; mathematical, industrial precision control, electro-medical and surgical instruments. The total turnover of the industry is of the order of Rs. 400 million a year. Newer lines of production are being added from time to time. Recently, for instance, the industry has been able to successfully manufacture certain sophisticated instruments including electrostatic photo copying machines, cardiograph recording paper and blood transfusion and infusion equipment.

Indian exporter has already entered the world markets for the supply of a broad range of instrumentation. The export value of scientific, medical, optical, measuring and controlling instruments and parts, was of the order of Rs. 16.5 million in 1971-72. Among the important customers were Kuwait, Soviet Union, Sudan, Canada, Nigeria, German Federal Republic, Philippines and Japan for medical instrumentation; Sudan, Kenya, Iraq, Spain, U.K., U.S.A., Cyprus and Greece for surveying, mathematical and calculating instruments and Australia, Malaysia, U.K., U.S.A. and Sweden for other varieties of precision instruments.

PISTON CASTINGS TO UNITED KINGDOM

That a single customer of a country like the United Kingdom has placed repeat orders worth over £ 400,000 on an Indian supplier should speak well of India's capability in the export of piston castings. M/s. India Pistons Limited, Sembiam, Madras-11, manufacturer of pistons, piston rings, cylinder liners, gudgeon pins and circlips, received the repeat orders from the U.K. and have also supplied original equipment and replacement pistons to Arab Republic of Egypt and Yugoslavia, besides their regular exports to Afro-Asian and European markets.

Claimed to be equipped with one of the most modern piston assembly making units in South East Asia, the firm meets the best part of domestic piston requirements of automotive and industrial engine manufacturers and more than half of the total replacement needs of the country's industry.

The firm was able to sell over two million piston castings to the customer in the U.K. due to the confidence that they have raised for consistent quality of their products and their precision as per the specifications required by the exacting importer.

India's installed annual capacity for the production of piston and piston rings is of the order of 2.52 million numbers and 16.5 million numbers respectively (1971). The actual production of pistons in the year was estimated at 1.8 million numbers and that of pistons rings at 15.6 million numbers. The country's installed capacity for cylinder liners is 444,000 numbers and their output in 1971 was 282,000 numbers. Aside from the established production of above auto ancillaries the automobile industry in the country is capable of producing a wide range including nozzles and holders, delivery valves, single and multi-cylinder pumps, starter motors, gaskets, spark plugs, voltage regulators, engine valves, carburettors, radiators, clutch assembly, universal joints, hydraulic pumps and valves and tipping gears. The total production value of automobile ancillaries in India is in the range of Rs. 5240 million a year.

The automobile ancillaries constitute the foremost category of export growth among the engineering exports. These exports fetched as much as Rs. 63.21 million in 1971-72.

SWITCHGEAR PRODUCTS IN EXPORT TRADE

India's export value of electrical power machinery and switchgear products was up at about Rs. 47.50 million in 1971-72 as against Rs. 44.68 million in the previous year. The items exported include switch, relay and control panels, besides generators, electric motors, transformers, circuit breakers, resistance wires, plugs and socket holders.

M/s. English Electric Company of India Limited, Pallavaram, Madras-43, one of the manufacturers in the line have succeeded in recently securing a number of orders from countries like Muscat, Sudan and other East African countries. The export order from Muscat is for two 2-CFS Boards, 7 Distribution Fuse Boards

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cum Isolators and 60 LP Switch Fuse Units. Sudan has placed orders on the firm for 300 LP Switch Fuse units and 50 CFS units. They also secured deals for the export of 18 weather proof CFS boards, 6 CFS units, 1 ACB panel and 45 welding receptacles to East African markets.

The Madras firm manufactures a wide range of control and protection equipment. They specialise in the manufacture of sophisticated switchgears, relay and control panels. The firm is also equipped with modern research and testing facilities.

The Madras firm has succeeded in introducing a new range of heavy duty fuse - switch units in front access cubicle switchboards. To meet the demand from Bokaro Steel plant, the firm specially developed a new range of fuse switch units with heavy duty performance. A fully indigenous range of units was developed, manufactured and tested by the firm within a short duration of four months. About 60 boards were supplied by the firm to Bokaro. Benefits of this new design are available now to users of medium voltage equipment at home and abroad.

In the organised sector, the production of switchgear group of industries was of the order of Rs. 451 million in 1971 as compared to Rs. 398 million worth during 1970.

EXPORT ORDERS FOR ALUMINIUM CABLES

India's exports of electric wires and cables fetched foreign exchange at a value of about Rs. 103.70 million in 1971-72.

Recently, an Indian firm engaged in the manufacture and export of electric goods, M/s. Siemens India Limited, 134-A, Dr. Annie Besant Road, Bombay-18, secured a sizeable contract from M/s. Razno Import, the State importing agency of the Soviet Union for the supply of high tension aluminium paper insulated power cables valued at Rs. 10 million. According to the terms of the contract, the supplies are to be effected from March 1973.

One more firm, M/s. Indian Cable Company, 9, Hare Street, Calcutta recently secured an export order worth Rs. 4.66 million from Abu Dhabi for the supply of power cables to that country. This order was bagged against stiff global competition. The deliveries are to be made within 7 months. With the conclusion of this contract, the Indian power cable industry penetrated into a new market in the United Arab Emirates.

A wide variety of cables manufactured in the country was exported during 1971-72 to a large number of countries. Insulated wire and cables constituted the main category having brought in Rs. 50.76 million, accounting for nearly 50 per cent of the entire export value. U.S.S.R. with an intake worth Rs. 17.95 million occupied the place of foremost buyer, followed by Singapore at Rs. 10.95 million, Kuwait at Rs. 5.67 million, Malaysia at Rs. 2.17 million, Iran at Rs. 2.10 million, Sudan at Rs. 1.92 million, Qatar at Rs. 1.42 million, Arab Republic of Egypt at Rs. 1.22 million and German Democratic Republic at Rs. 1.16 million. Iraq, Trucial Oman, Federal Republic of Germany, Hong Kong, Abu Dhabi, Aden, Cyprus, Netherlands, Japan, U.K. and Mauritius were among the other purchasers.

The second important category in the line was that of bare copper conductors which earned Rs. 33.66 million. Iran with an intake valued at Rs. 26.71 million was the leading importer, followed by Singapore at Rs. 1.80 million, Qatar at Rs. 1.21 million and Sri Lanka at Rs. 1.07 million. New Zealand, Jordan, Kuwait, Hong Kong and Abu Dhabi were among the other buyers.

Bare aluminium conductors, the next best category active in the export stream fetched Rs. 18.88 million. U.S.S.R., again topped the list of importing countries having imported worth Rs. 7.68 million. Iran emerged as the second important destination whose intake totalled Rs. 3.03 million. Singapore (Rs. 1.38 million), Yugoslavia (Rs. 1.37 million), German Democratic Republic (Rs. 1.08 million), ARE (Rs. 0.84 million), Malaysia (Rs. 0.74 million) and Sudan (Rs. 0.6 million) were the other buyers.

Besides, the copper winding wires were also active in the export trade. New Zealand, Singapore and Hong Kong were the prominent purchasing countries.

Among the priority industries of India, cable and wire industry ranks prominently. The range of items manufactured by the industry includes ACC/ACSR conductors, winding wires, PILC power cables, underground telephone cables, PVC power cables, PVC/VIR cables and switchboard cables for telephones and bare copper conductors.

During 1971, as against the installed capacity of 0.87 million kilometres for AIR and PVC cables and wires, the actual output of the 25 units engaged in the line was of the order of 0.49 million kilometres. In the same year, the installed capacity of 100,000 tonnes for ACSR and AAC winding wires was spread over among the 34 units (registered) and their actual production was 71,635 tonnes. The figures of installed capacity, actual production and the number of units engaged in the production of other categories of cables and wires in 1971 were : 17,509 tonnes, 18,969 tonnes and 29 units in respect of enamelled wires, paper cotton covered wires and strips; 8,360 kilometres, 2,177 kilometres and 7 units in respect of paper insulated power cables; 14,200 tonnes, 860 tonnes and 4 units in the case of bare copper conductors.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT PROSPECTS OF ENGINEERING GOODS

The Engineering Export Promotion Council, Calcutta, have fixed the export target of engineering goods at Rs. 2000 million for the year 1973-74. It is anticipated that the Asian region will absorb as much as Rs. 820 million worth of these products while African markets will import worth Rs. 490 million, West and East European markets Rs. 480 million, Americas including West Indies Rs. 157.5 million, Australia Rs. 37.5 million and Oceanic Islands Rs. 15 million. The itemwise targets fixed indicate that auto and autoparts will fetch Rs. 250 million, industrial plant and machinery Rs. 200 million, electric wires and cables Rs. 150 million, railway wagons and coaches Rs. 150 million, MS pipes and tubes Rs. 120 million, bicycles and parts Rs. 120 million, steel structurals Rs. 105 million, hand and small tools Rs. 11 million, electric motors and transformers Rs. 75 million, electronic equipment Rs. 75 million, castings and forgings Rs. 80 million, machine tools Rs. 50 million, diesel engines Rs. 65 million and other engineering goods worth Rs. 470 million.

With a view to provide a boost to the export trade in the line, the Government of India have devised a detailed framework of policy including the provision of imported raw materials to registered exporters, supply of indigenous raw materials like steel and aluminium on priority, organising of bulk imports of certain raw materials by Public Sector Agencies for export fabrication, promotion of export production and overseas marketing for selected commodities by the Trade Development Authority, enlarging the activities of the Projects and Equipment Corporation of India in the export field of engineering goods, and compensatory support being offered to exporters of selected products to develop marketing competence as also to neutralise the disadvantages inherent in the present stage of development in the country.

The export value of engineering products has been registering consistent uptrend. In 1968-69, the value was of the order of Rs. 846 million, it rose to Rs. 1064 million in 1969-70, Rs. 1166 million in 1970-71 and Rs. 1204 million in 1971-72. In the first three-quarters of 1972-73, it was estimated that the engineering products would fetch foreign exchange worth Rs. 960 million as against Rs. 917 million in the same period of the preceding year.

Among the major customers of India's engineering products are Iran, Iraq, Sri Lanka, Singapore, Malaysia, Thailand, Kuwait, Burma, Bangladesh, and Saudi Arabia in Asia; Sudan, Arab Republic of Egypt, Nigeria, Kenya, Uganda and Tanzania in Africa; U.K., German Federal Republic and Netherlands in West Europe; U.S.S.R., Yugoslavia, Czechoslovakia and German Democratic Republic in East Europe, as also Malaysia, Australia and New Zealand.

An interesting development in India's engineering product export trade relates to the securing of high value contracts and turnkey projects. During the post-devaluation period (since June, 1966), the total value of big contracts and turnkey projects secured by the Indian exporters amounted to more than Rs. 2250 million. Supplies under these contracts have been made to customers in South East Asia, Africa, East Europe as well as advanced countries like the U.S.A. and German Federal Republic. These high-value contracts mainly covered supplies of power cables, transmission line towers, railway wagons, rail and rail accessories, HR boilers and textile machinery. The turnkey projects secured include cement plants, water pumping stations and power stations. Additionally, the Indian industry has been increasingly participating in a number of joint ventures abroad, particularly in the developing countries in which plant, machinery and equipment, technical know-how and equity participation are being supplied from India.

The winning over of turnkey projects and high value contracts against global tenders helped the Indian industry to export such lines of engineering goods as were not being exported in sufficient quantities and to raise confidence abroad about India's technical competence even in selling consultancy services. A significant change in the pattern of Indian export of engineering goods in future would be the increasing share and content of project exports rather than product exports.

STEPS TO PROMOTE SHOE EXPORTS

On account of large exports of semi-processed hides and skins, there has been some shortage of leather supplies and the consequent rise in its prices. The footwear industry in India has been facing some difficulty in this behalf and the Indian Government have initiated certain steps to meet the situation. Exports of footwear of all categories and to all destinations have been canalised through the State Trading Corporation of India, effective from middle of November, 1972. Exports of semi-processed hides and skins including crust leather have also been canalised through the Corporation. Effective from January 20, 1973, a ban has been imposed on the exports of all types of raw hides and skins except lamb fur skins. Restrictions are being placed on the exports of semi-finished hides and skins by the introduction of quota system effective from April 1, 1973. The quota is aimed to be reduced gradually over a period of five years, by the end of which their export will be reduced to 25 per cent of 1971-72 exports.

During 1971-72, the export value of semi-processed hides and skins including East-India tanned and wet blue hides and skins as also crust leather totalled Rs. 840 million. In the first three quarters of 1972-73 (April-December 1972), the estimated export value was of the order of Rs. 1052 million. It is thus anticipated that the export during 1972-73 would be about Rs. 1500 million.

It has been the policy of Indian Government to improve the overseas supply of finished leather and leather manufactures including leather footwear so as to earn better unit value. Accordingly, it is aimed at regulating exports of semi-processed hides and skins and fostering the leather industry in general. The establishment of a Leather Export Development Corporation is also envisaged to serve as the canalising agency for exports of leather and footwear as also to undertake developmental work necessary for improving the industry's export performance. The development work will include active research in leather industry in the country and development of overseas markets for finished leather and leather manufactures.

In 1971-72, the export value of E.I. tanned hides and skins stood at Rs. 636.5 million and that of chrome tanned leather at Rs. 203.8 million. In the first three quarters of 1972-73, these exports totalled Rs. 658.10 million and Rs. 393.50 million respectively. In these two periods, the exports of finished leather rose from Rs. 41 million to Rs. 53.2 million, furs Rs. 0.3 million to Rs. 8.7 million and industrial leather manufactures from Rs. 18.7 million to Rs. 25.2 million. The export value of footwear and footwear components, however, declined from Rs. 86.3 million to Rs. 69.4 million.

RISING TREND IN TEA EXPORTS

India's export trade in tea has been registering a consistent uptrend. In 1970, the export value of the item amounted to Rs. 1487.5 million, in 1971 Rs. 1553.4 million and in 1972 Rs. 1556 million. In terms of quantity, the exports totalled 202 million kg., 206 million kg. and over 207 million kg. in these three years.

The share of imports by U.S.S.R. has also been rising. It was of the order of Rs. 239.6 million (288 million kg.), Rs. 338.3 million (413 million kg.) and Rs. 342.4 million (415 million kg.) in the three years ended 1972. The U.K. market's purchases have, however, registered decline from Rs. 705 million (97 million kg.), to Rs. 524 million (70 million kg.) and Rs. 434 million (57 million kg.). The share of East European countries, other than Soviet Union, improved from Rs. 29.4 million to Rs. 45.3 million and Rs. 77 million. A.R.E.'s purchases were Rs. 73 million, Rs. 58 million and Rs. 83 million in the respective years, while those of Sudan rose from Rs. 63 million to Rs. 79 million and Rs. 98 million. Other countries purchased worth Rs. 378 million, Rs. 509 million and Rs. 532 million.

The Tea Board of India has been organising export promotional activities, both in the form of generic promotion and Uninational promotion. The generic promotional activity aims at increasing the overall consumption of tea. Such promotion of tea as a beverage is being effected through various Tea Councils abroad of which the Tea Board of India is an active member. The Tea Board is presently a member of the Tea Councils of U.K., U.S.A., Federal Republic of Germany, France, Canada, Australia, New Zealand as also of Irish Tea Council. The Uni-national promotion organised by India's Tea Board is specifically directed to project an image of Indian tea and increase her exports. This activity is undertaken by the Tea Board's five offices abroad located in London, Brussels, New York, Cairo and Sydney. Even in the regions not covered by the Board's foreign offices, promotional activities are organised through their Headquarters at Calcutta.

Other measures taken by the Tea Board for promoting the item's trade include the promotion of special packs of Indian tea in selected markets abroad with the cooperation of the local blenders and packers. They also participate in the trade fairs and exhibitions abroad and organise exchange visits of traders. The unit value of Indian tea has been improving year after year. It was estimated at Rs. 7.36 per kg. in 1970, Rs. 7.54 per kg. in 1971 and Rs. 7.55 per kg. in 1972.

EXPORT CONTRACT FOR ELECTRONICS

An export target of Rs. 22.5 million worth of electronics goods to U.S.A., Canada, West Europe including U.K. and Japan has been set by the Trade Development Authority for the year 1972-73. Against this target, the orders already booked during April-December 1972 totalled Rs. 22 million out of which actual exports of the value of Rs. 10 million were already effected.

The major items of export for which the above target has been set are condensers, semi-conductors, electronic calculators, transistor radios, magnetic heads, car radios, volume control, printed circuit boards, loudspeakers, public address equipment, telescopic antennas, digital instruments, resistors, and magnetic tapes.

SUPPLY POSITION OF WAGONS TO YUGOSLAVIA

Of the contracts signed by the State Trading Corporation of India in 1970 for the supply of 3600 wagons to Yugoslavia, 50 wagon sets of sub-assemblies have been shipped. One prototype wagon has been tested, passed and shipped and the second prototype is under tests. An extension of 8½ months to the delivery schedule has been obtained for three of the wagon builders engaged in the export deal.

The contract which is worth Rs. 374.40 million was for the supply of 2300 open type and 1300 covered type wagons. Among the Indian firms that are to supply these wagons, M/s. Jessop & Co. Ltd., Calcutta, are to supply 433 covered wagons at a value of Rs. 49.4 million, M/s. Braithwaite and Company, Calcutta, 433 covered wagons at Rs. 49.40 million, M/s. Textile Machinery Corporation, Calcutta, 434 covered wagons and 425 open wagons at a value of Rs. 91.30 million, while M/s. Burn & Co. Ltd., Calcutta, are to export 1000 open wagons at Rs. 98.30 million and M/s. Indian Standard Wagon Co., Calcutta, 875 open wagons at a value of Rs. 86 million.

Under the contract, the payment terms provided that 5 per cent of the total value should be payable in advance (already received), 5 per cent payable on delivery of assembled wagons and 90 per cent in twenty equal half-yearly instalments, the first instalment becoming due two years after delivery with a rate of interest of 5 per cent per annum thereon. The contract is on the basis of shipment of wagons from India in the shape of sub-assemblies. Their assembly into complete wagons is to be effected in Yugoslavia.

The contract ran into initial difficulties which were sorted out with the cooperation of M/s. Rudnap, the importing agency of Community of Railways, Yugoslavia. The delivery schedule was suitably extended and Projects and Equipment Corporation is keeping a close watch on the execution of the supplies. During 1973, it is expected that approximately 1550 wagons will be shipped in semi-knocked down condition for delivery after assembly in Yugoslavia. The shipments are likely to be completed by the second half of 1974.

BUSINESS TRANSACTIONS AT THIRD ASIAN FAIR

The total value of business transacted at the Third Asian International Trade Fair that was held in India during November-December 1972, amounted to Rs. 572 million out of which export orders to the tune of Rs. 308.13 million were concluded and deals for import of goods worth Rs. 263.96 million were also finalised. These figures obviously do not reflect the totality of export prospects generated. The results in terms of specific orders booked, business negotiated and trade enquiries received would be fully gauged over a period of time only.

Among the business deals concluded during the Fair, the Soviet Union has placed orders on Indian firms for the supply of garage equipment, medical instruments, sport shoes, chappals, spectacles and readymade garments. Total value of the orders placed by that country is estimated at Rs. 115 million. Czechoslovakia concluded deals for supply from India for a variety of items including raw materials for textile industry, groundnuts and cotton seed extraction, raw jute, handicrafts, sports and leather goods, locks and padlocks, hand tools, alam clocks, brakesoles and cast iron, skin and leather, raw materials for chemicals and pharmaceuticals, coffee and groundnuts. The orders placed by Czechoslovakia are estimated at about Rs. 910 million. The German Democratic Republic sought to import mica blocks and splittings worth Rs. 10 million from India. Coal and coke was the major item for which Bangladesh concluded deals worth Rs. 13 million. A total value of Rs. 12.4 million worth of orders were placed by Poland for items like refrigerators, aluminium utensils, vacuum flasks, sports goods, ice buckets, bicycle chains, padlocks and sports cycles. Among the West European countries, Sweden evinced interest in India made home furnishings, sanitary fittings and hand tools worth Rs. 2.7 million. Spain placed orders for handicrafts and home furnishings at a value of Rs. 2.5 million. Readymade garments and surgical appliances were the specific products for which Netherlands placed orders, while stainless steel cutlery were sought, among others, by Sweden, Federal Republic of Germany and Netherlands.

U.S. purchasers sought to import Rs. 2.7 million worth of a range of products such as fencing components, bicycle chains, woollen hosiery, industrial fastners, readymade garments, locks and padlocks, handware tools and bicycles (speed light weight sport).

Among other parties that placed on-the-spot orders at the Fair were Australia for readymade garments, Canada for bicycles and bicycle components and Kuwait for lacquerware. Interestingly, certain countries which did not participate in the Fair also placed the above orders. Among them, the important ones were U.S.A., Iran, Netherlands, West Indies and the U.K.

In addition to the deals finalised for India's export, the Indian parties also concluded import deals with U.S.S.R., Czechoslovakia, G.D.R., Hungary, Poland and Rumania. The value of such deals amounted to Rs. 264 million of which nearly Rs. 67 million worth of products are to come from U.S.S.R., Rs. 53 million worth from Czechoslovakia, Rs. 60 million from G.D.R., Rs. 50 million form Rumania, Rs. 53 million from Czechoslovakia and Rs. 2.4 million from Poland. The products that the Indian parties desired to purchase from the U.S.S.R. were excavators and spare parts, crushers, rotary printing machines and offset machines, tractor spare parts, central measuring instruments, steel products and palladium. Among the products that are to be imported from Czechoslovakia, printing machinery, wood working machinery and machine tool components are important. The deal finalised with G.D.R. was for the import of muriate of potash while Rumania is to supply calcium ammonia nitrate. This range of imports into India for which business deals were concluded in the Fair relates mainly to such areas where indigenous production is not too adequate.

EXPORTS TO BANGLADESH

India's export trade to Bangladesh during 1971-72 was estimated at Rs. 380 million. Even in the first five months of 1972-73 (April-August 1972), the export value came to an estimated Rs. 332.2 million.

Among the major products supplied to Bangladesh by India in the five-month period, wheat occupies prime position at Rs. 193.3 million. Next in importance was raw cotton (excluding linters and sweepings at Rs. 30 million. The supplies of un-manufactured tobacco amounted to Rs. 19.6 million while those of cement portland grey netted Rs. 12.7 million. Another item of importance was cotton yarn and thread which was exported to the tune of Rs. 7 million. Galvanised and corrugated sheets of iron and steel fatched Rs. 4 million while medicinal and pharmaceutical products secured Rs. 3.5 million. Milk and cream, paper and paperboard, iron and steel wire rods, pig iron including cast iron, castor oil, split gram, iron and steel bars and rods, articles made of pulp and rubber and pottasium chlorate were among the other products supplied.

India's imports from Bangladesh during April-July 1972 totalled Rs. 2.6 million. The major products imported were raw jute, furnace, jute batching oil and naphtha, newsprint and molasses.

Under the Indo-Bangladesh Trade Agreement signed in Mach 1972, valid for a period of one year initially, there were three-tiers of trade consisting of limited payments arrangement, trade outside limited payments arrangements and the barter trade. Trade under the Limited Payments Arrangement was envisaged at Rs. 500 million in commodities like raw jute, petroleum products, newsprint and paper, cement, coal, tobacco, movies, spices, asphalt, semi-tanned cow hides, molasses, hardboard and handloom products. Under the Trade Arrangement Outside the Limited Payments System, commodity exchanges are to be governed by the respective trade and commercial foreign exchange regulations. It has been the practice in Bangladesh to invite international tenders for imports required by Government Departments and State Trading Agencies. Already Indian entrepreneurs have been successful in winning such tenders for the supply of textiles, cycles, commercial auto-rikshaws, autombile spares and pumping sets. The third kind of Arrangement in the three-tier system releting to barter trade which was intended to facilitate exchanges of perishable commodities and articles of daily use to meet the requirements of people living in rural areas on either side of the land customs frontier, was suspended since October, 1972.

TRENDS IN EXPORTS TO EAST EUROPE

India's two-way trade with East Europe has registered consistent uptrend. In 1953, it was of the order of Rs. 86 million while in 1962 it was Rs. 3050 million and in 1971 Rs. 5605 million. Of this total, Indian exports amounted to Rs. 52 million, Rs. 1368 million and Rs. 3480 million in the respective years.

The Soviet Union's share of Indian exports in 1971 totalled Rs. 2120 million while the value of Indian imports from that country were Rs. 886 million. Next in importance was Poland whose intake from India totalled Rs. 182 million and Indian imports were Rs. 463 million in the same year. Indian supplies to Yugoslavia totalled Rs. 272 million and her imports Rs. 62 million. Rumania absorbed worth Rs. 118 million while her supplies to India were Rs. 140 million. The German Democratic Republic purchased worth Rs. 214 million while her supplies totalled Rs. 201 million. Indian exports to Czechoslovakia were Rs. 287 million and imports supplies were Rs. 113 million, while Bulgarian imports from India were Rs. 134 million and her supplies were Rs. 159 million.

Trade between India and East Europe has emerged in less than two decades as an important factor in India's external trade and economic relations. The share of these countries in Indian global exports increased from 12.5 per cent in 1960-61 to 22 per cent in 1971-72. Similarly, the share of East Europe in India's global imports rose from 4 per cent in 1960-61 to 11 per cent in 1971-72.

During 1971, Indian exports of traditional items including textiles, jute manufactures and coir goods constituted about 78 per cent of her total exports to the East European region. In 1973, trade plans with East Europe (excluding Yugoslavia), envisage more and more of India's non-traditional exports and this group of items is to increase its contribution by about 22 per cent to 30 per cent more than the 1971 level. The major commodities exported from India to East Europe include cashew kernal, coffee, spices, oilcakes, un-manufactured tobacco, mica, iron ore, leather, cotton manufactures, jute manufactures, engineering goods, coir goods and chemicals.

During 1971-72, India's export trade of jute manufactures to East Europe totalled Rs. 455.5 million out of the total export turnover of Rs. 3436 million. Next in importance was tea at Rs. 402 million. Leather exports were valued at Rs. 314 million. Oilcakes fetched Rs. 265 million. Exports of cashew kernels were of the order of Rs. 212 million. Clothing secured Rs. 204 million. The exports of un-manufactured tobacco, coffee and spices respectively were Rs. 265 million, Rs. 127 million and Rs. 123 million. Iron ore supplies netted Rs. 158 million while mica fetched Rs. 100 million.

In the first five months of 1972-73 (April-August 1972), the export value was Rs. 1820 million against Rs. 1475 million in the same period of the preceding year.

WEST EUROPEAN MARKETS FOR INDIAN TELEPHONES

The Indian Telephone Industries, Dooravaninagar, Bangalore, a public sector undertaking has so far exported equipment worth Rs. 40 million to 45 countries including the U.K. and Australia.

The export orders currently on hand with the company amount to Rs. 15.5 million. Among the pending orders is the turnkey contract for supply, installation and commissioning of a 1000 line automatic telephone exchange in Jordan.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

NATIONAL BUDGET PRESENTED

While presenting the Central Budget for the year 1973-74, India's Finance Minister, Mr. Y. B. Chavan, emphasised on five major tasks of socio-economic progress. The inflationary pressures in the Indian economy would have to be contained through a judicious combination of demand management, increased production of wage goods and strengthening of the public distribution system. In order to improve growth prospects, vigorous efforts would have to be undertaken to increase the rate of savings and investment in the economy. The third important task would be to achieve greater viability on the external front, through higher exports and restraint on imports. A rapid increase in employment opportunities and determined efforts to reduce disparities in income and consumption would be another immediate task. The fifth principle underlining the budget proposals was to design programmes for providing minimum basic amenities to citizens in the country so as to secure greater social justice.

Describing the economic situation in the country, the Finance Minister referred to the failure of the monsoons in 1972 which created drought and scarcity conditions in several parts of the country. For the second year in succession, the production of foodgrains suffered a serious setback. The drought has also adversely affected the production of important commercial crops, such as oil seeds and raw jute. The abnormal increase in prices that took place in 1972-73 was mainly a reflection of these imbalances. To meet the situation, a country-wide emergency programme was launched to increase agricultural production. As a precautionary measure, the import of about 2 million tonnes of foodgrains during the early part of 1973 has been arranged for. The failure of the monsoon brought into sharp focus the country's continued heavy dependence on rains and the urgent need to expand the area under irrigation.

While the agricultural production did not reveal encouraging trends, there has been a sharp acceleration in the rate of growth in industrial production. The index of industrial production is expected to register an increase of about 7 per cent in 1972-73 as compared to an increase of 4.5 per cent in the preceding year. A large number of industries has contributed to the industrial recovery. The rapid growth of textiles sector was particularly a favourable factor.

Developments on the export front are also encouraging. Export earnings increased by 23 per cent in the first eight months of 1972-73. Looked against the uncertainties that prevailed in export markets, this was indeed a good performance. The export of engineering goods, however, has lost its earlier momentum. Factors, such as lesser utilisation of external assistance and large payments for import of foodgrains and industrial inputs like iron and steel, oil and fertilisers are likely to exert greater pressure on the country's foreign exchange reserves. "If self-reliance is to become a living reality, there must be a massive increase in our exports, coupled with adequate expansion in the domestic production of such vital import substitutes as iron and steel and fertilizers and increased efforts in exploring indigenous sources of supply of oil. The behaviour of agricultural production, both of foodgrains and commercial crops will also be a major determinant of the state of our balance of payments".

Notwithstanding the rapid growth of industrial production and exports, the growth of real national income during 1972-73 is likely to be small mainly due to the lack of adequate growth in the agricultural sector. The Government of India have fixed the growth target for the Fifth Five Year Plan ending 1978-79 at 5.5 per cent per annum. The Finance Minister felt that the target was not unrealistic. "The political and economic development of India since independence has belied the gloomy prophecies of many a distinguished commentators. More than once it has been demonstrated that the economy and polity of India have the resilience to bear hard shocks and emerge even stronger."

Taking the central plan as well as State and Union Territories plans, the total plan outlay in 1973-74 has been placed at Rs. 43,560 million against Rs. 40,110 million in 1972-73. This includes a provision for Rs. 19,240 million for the central plan, Rs. 8,100 million by way of central assistance to State plans and Rs. 1,100 million for Union Territories. With a view to combining the objective of rapid economic growth with the ideal of securing greater social justice, certain earlier measures like the nutrition programme for children, rural water supply schemes and rural employment schemes are continued and new schemes are introduced, specially for providing additional employment opportunities, slum improvement, primary education and so on. On the non-plan side, defence expenditure has been retained at the same level as in 1972-73, namely, Rs. 16,000 million.

In the direct taxation system, agricultural income has been taken into account in determining the rate of tax applicable to non-agricultural income. The corporate sector has not been subjected to any additional taxation. Provision has been made for paying better attention on the aspect of promotional research and development in the field of industry.

In regard to indirect taxation, certain revisions have been made in the import duties' structure. Auxiliary duties on the Customs side have been proposed by the introduction of three differential rates of 20 per cent, 10 per cent and 5 per cent of the value of imported goods. Those commodities which were attracting an effective customs duty of 100 per cent *ad valorem* or more so far will now pay 20 per cent as auxiliary duties. Those paying 60 per cent *ad valorem* and more will pay 10 per cent and the rest 5 per cent. Foodgrains, books, family planning appliances were however, exempted from the auxiliary duties an customs. Another proposal in this connection relat to the modification of the rates of duties presentl bound under the General Agreement on Tariffs an Trade (GATT). The rates of duty on a number o items have been reduced, among which are wood pulp tallow and a few plastic materials.

To provide a further impetus to import substitution and to encourage more extensive manufacture of machinery indigenously, a fiscal incentive has been announced by making an "accross-the-board" increas on the rate of duty on all machinery from the existing level of 30 per cent to 40 per cent. Since the importe raw cotton is mainly used for the production of fine and superfine fabrics, the concessional rate presentl applicable has been withdrawn thereon and raw cotton is now liable to 40 per cent statutory rate which is the normal level of taxation for raw materials under the Indian Customs Tariff. The import duty on copper has been increased by 10 percent. The duty on stainless steel sheets has been doubled. An increase in customs duty was also announced on unexposed cinematographic films.

Among the items for which the increased excise duties were announced by the Minister are cigarettes, pipe tobacco, fents and rags, motor spirit, synthetic yarn and fibres, refrigerators and air conditioners, commercial plywood, domestic electric appliances, instant coffee, shaving cream and long playing records. A few new items were also added to the list, namely, caustic potash, carbon black, carbide tool tips, wire ropes and certain rubber chemicals.

In sum, the Budget for the year 1973-74 represents "another major effort on the part of Government to get the country moving towards the goal of an expanding self-reliant economy based on social justice", stated the Finance Minister.

TRENDS IN NATURAL RUBBER PRODUCTION

India's production of natural rubber is estimated at 130,000 tonnes for the year 1972-73. Actual output in 1971-72 was 101,210 tonnes, 92,171 tonnes in 1970-71 and 81,953 tonnes in 1969-70. The output of synthetic rubber was 32,910 tonnes in 1971-72, 29,790 tonnes in 1970-71 and 28,670 tonnes in 1969-70.

The capacity of existing Synthetic Rubber Factory (Bareilly) is of the order of 30,000 tonnes. In 1971-72, the factory produced 32,910 tonnes. It has been informed that it would be possible for this factory to step up production to 36,000 tonnes or more during 1972-73, depending upon the availability of alcohol.

Currently, the import of natural rubber into India is banned, but the registered exporters of specified rubber products are permitted to import a certain percentage against their import entitlement. Under the policy, 405 tonnes of natural rubber were imported during 1971-72 and 84 tonnes in the first 4 months of 1972-73 (April-August 1972).

NEW HEAVY ENGINEERING EQUIPMENT DEVELOPED

New types of heavy engineering equipment are being developed by the engineers of M/s. Heavy Engineering Corporation, Ranchi. These include 75 sq. metres sintering machine, 400 tonnes of steel melting shop cranes and aluminium electrolysers. A Coke Pusher developed by the Heavy Machine Building Plant of the Corporation is stated to be as tall as a three storeyed building.

The Foundry Forge plant of the Corporation has been registering record production trends in recent months. It despatched a little over 3,000 tonnes of saleable products in January this year, which is about 150 tonnes more than the previous highest achieved in December, 1971.

RAILWAYS EQUIPPED WITH COMPUTORS

Indian railways have been recently equipped with 14 computors with the object of processing information on the interchange of wagons between the railways and also for maintaining an account of wagon holdings and pool balances. Besides this, on zonal railways the computers are mainly used for keeping traffic accounts, inventory control and payrollls.

Of the total computors installed, 9 are under operation on zonal railways and the remaining 5 at Chittaranjan Locomotive Works (CLW) at Chittaranjan, M/s. Diesel Locomotive Works (DLW), Varanasi, M/s. Integral Coach factory, Perambur, the Railway Board and at Mughalsarai marshalling yard, at the rate of one each.

The computor installed in the Railway Board helps in interchanging wagons and maintaining information of wagon holdings and pool balances. It receives information from 41 interchange points and seven marshalling yards in the country. With the help of computor, the Board is in a position to assess the wagon position on hand and thus faces no difficulty in making realistic planning for daily movement of wagons. The computor also monitors the movement of special stocks like acid wagons and petrol tank wagons. At the Mughalsarai Marshalling Yard, it helps in handling more than 5500 wagons every day. It also helps in streamlining the yard's statistics and further helps to reduce the incidence of unconnected wagons. At zonal level, the computors help immensely in preparing traffic accounts, inventory controls and pay rolls etc. These are also useful in bringing down progressively the inventory of railway stores. About 35000 items of maintenance stores are handled by the Railways in about 64 depots set up by the Railways throughout the Railway network. Before the installation of computors in the Railways, all these operations were being handled manually.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

NEW PROCESS FOR LEATHER INDUSTRY

While making conventional wax emulsion for leather goods industry, the manufacturers are presently facing the problem of 'Foaming'. As a solution to the problem of 'Foaming' and to get a better glaze, slip and anti-tack feel on the leather surface, a new process has recently been developed by the Central Leather Research Institute (CLRI), Madras.

The process developed by the CLRI consists in melting wax (shellac or carnauba wax) with triethanolamine and an emulsifying agent. An organometallic compound is then added to the molten material and stirred well. The equipment used for the purpose is a stainless steel jacketed vessel with high speed stirring arrangement. Produced in a pilot plant of about 150 kg. per day, the process and product has four advantages, namely, no foaming, no agglomeration leading to particles, easy slip and anti-tack feel and better glazing properties due to the addition of organometallic compound.

The raw materials required for the process are shellac wax, triethanol amine, surfactant (emulsifier) and organo metallic compound. All these are available indigenously.

PRESERVATIVE FOR SMALL WEAPONS DEVELOPED

The Defence Research Laboratory (Materials), Madras, has developed an indigenous material, "Preservative Oil DRL (M)-103" as a substitute to oil OX-52 or oil 'A' which is at present imported for use as a lubricating and preservative material for small weapons.

The material developed by the Laboratory consists of two indigenous neat mineral oils mixed in appropriate proportions to match the physical properties of the base oil, namely, Oil M-80, used in the preparation of oil OX-52. The mixture of oils has been fortified by an indigenous oil soluble corrosion inhibitor to impart corrosion preventive property to a degree superior to that of imported oil OX-52.

The developed oil has undergone rigorous accelerated laboratory corrosion tests. The Chief Inspectorate of Small Arms (CISA), Ichapur, have also assessed it vis-a-vis oil OX-52 through user trials. CISA has found it entirely satisfactory. In fact, CISA is reported to have recommended its introduction into Defence Services in lieu of imported oil OX-52. Apropos these recommendations, introductory action has been initiated and a patent application has also been filed.

The raw materials required for the manufacture of the product are two neat mineral oils of appropriate physical properties and an oil soluble corosion inhibitor. All these are available indigenously.

SPECIAL CORRECTION PAPER

The Regional Research Laboratory (RRL), Jorhat, has developed a special 'Correction paper'. With its use, typing errors, both in the original and in carbon copies can be corrected easily. This would save not only valuable stationery but also retyping time.

The process developed by RRL consists in coating sized paper or grease proof paper with a 'special chemical mix' prepared with indigenously available commercial grade chemicals. The coated paper after drying is cut into proper size and packed.

Samples of 'correction paper', prepared on the laboratory scale, compare very well with imported ones, and have been found very useful.

The major item of equipment required in the process is the coating machine which can be fabricated indigenously.

MAIZE STARCH SUBSTITUTE FROM TAMARIND

The National Chemical Laboratory (NCL), Poona, has successfully carried out investigations to develop modified Tamarind Kernel Powder (TKP) and has evolved a process for the manufacture of its phosphate and borate which can be used as a good substitute for hydrolysed maize starch and even more effectively than TKP.

The process developed by NCL consists in spraying a mixture of phosphoric acid and caustic soda solution on TKP. The product is mixed well and dried at 50° C. It is then powdered in a ball mill, sieved through 100 mesh and then heated at 150° C. Likewise, for making TKP borate, a solution of boric acid, caustic soda and urea is sprayed on TKP. The rest of the steps are the same as followed for production of TKP phosphate.

The work in the laboratory has been conducted on 5 kg. scale. The product has been tested by Ahmedabad Textile Industries Research Association, Ahmedabad, and found to compare well with hydrolysed maize starch. Being a new product, its market potentiality is to be established.

The major raw materials required for the manufacture of modified TKP are Tamarind Kernel powder, phosphoric acid, caustic soda and boric acid. All these are indigenously available.

The major items of plant and equipment required are sigma blade mixer, ball mill, sieving machine and oven. All these are either indigenously available or can be fabricated in the country.

PRODUCTION OF EXTRA-FINE METAL POWDERS

A process to produce extra-fine metal powders in the straight range by automization has been developed by the National Metallurgical Laboratory (NML), Jamshedpur, recently.

In the process, straight non-ferrous metal powders are made by a process of atomization, wherein a stream of molten pre-alloyed metal is atomized by a stream of pressurized fluid under properly controlled conditions to yield the desired mesh size, sieve analysis, practical shape and other required physical properties. The know-how developed, covers the entire manufacturing process from melting of the metal (raw materials) to the packing of the finished saleable metal powder product.

The powders produced are comparable to international standards and by using proper control equipment, consistent quality of product is ensured with minimum losses.

The raw materials required in the process are copper, lead, zinc and aluminium. Excepting tin, these are indigenously available. The basic equipment required for producing atomized metal powders include melting furnace, atomization unit, centrifuge, dryer, blender and packing unit. Essential ancillaries include storage and material handling facilities as alsoquality control equipment. Optional ancillaries include items, such as, heat treatment, chemical treatment etc. The additional equipment required for conversion of the atomized powders to flaky powders for lithographic and other uses include special media grinding and polishing equipment. The design and fabrication of all the basic items of plant and equipment can be derived from indigenous sources. This know-how can be realised separately on request. The National Metallurgical Laboratory is in a position to transfer the complete technology for units upto 2500 kg /day (and above if required) in the form of a detailed Project Report giving design/drawings of equipment, layouts, techno-economic analysis, staff charts etc.

The non-ferrous metals specifically converted into powders by the NML process are aluminium, copper, lead, tin and zinc. In addition brass (commercial Cu-Zn compositions) and bronze (commercial Cu-Tin compositions) are also used for conversion into powders. The fine mesh sizes extend upto beyond 325 mesh (44 microns) with purity as desired.

The NML process can yield metal powders to the general specifications The general specifications include (i) Mesh sizes upto and beyond 325 mesh with sieve analysis, as desired, (ii) Flowability as specified (iii) Apparent densities as specified and (iv) particle shape spherical or irregular (depending on metal and process conditions).

Metal Powders by atomization are not yet widely in production in India and considerable scope exists in the country for setting up a large number of small scale units of upto 2500 kg. per day capacity to meet the current and projected demand for these straight non-ferrous metal powders. Export possibilities are also considerable, both to developed as well as developing countries.

These powders have some typical uses. Aluminium powder, for instance, is mostly used for manufacture of aluminium paste for preparing pigments and paints. In can also be used as a chemical as catalyst, in cold solders, in foundry exothermics and hot tops and in metal spraying and colouring. In the field of pyrotechnics, it is used in explosives, fares fireworks and in rocket propellants. Besides, it is used in making anti-burn ointments, brake linings, deodorants, drain cleaner formulations and filler in synthetic resins.

SELECTED ECONOMIC INDICATORS

	Unit	1960-61	1970-71	1971-72
Gross National Product	(Current Prices in Rs. million)	140280	36320	—
Per Capita National Product	(Current Prices in Rupees)	306	633	—
Food Grains	(Million tonnes)	82.21	108.42	104.7
Oil Seeds	(Million tonnes)	6.87	9.26	8.28
Sugar	(Thousand tonnes)	3029	3740	3110
Sugar Cane	(Million tonnes)	11.40	12.98	11.73
Tea	(Million kg.)	322	421	429
Coffee	(Thousand tonnes)	54.1	72.7	95.6
Cotton (Lint)	(Million bales; one bale equals 180 kg.)	5.24	4.50	6.53
Jute	(Million bales; one bale equals 180 kgs.)	4.13	4.94	5.71
Steel (Ingots)	(Million tonnes)	3.42	6.14	6.41
Steel Finished	(Million tonnes)	2.39	4.48	4.79
Steel Castings	(Million tonnes)	34	62	54
Aluminium (Virgin metal)	(Thousand tonnes)	18.3	166.8	181.5
Power Transformers	(Thousand KVA)	1413	8086	8871
Electric Motors	(Thousand hp)	728	2721	2348
Automobiles	(Thousand numbers)	55	88	91.3
Motorcycles & Scooters	(Thousand numbers)	19.4	97	113
Machine Tools	(Million Rs.)	70	430	550
Diesel Engines	(Thousand numbers)	55.5	69	71.5
Bicycles	(Thousand numbers)	1070	2042	1770
Sewing Machines	(Thousand numbers)	303	235	312
Radio Receivers	(Thousand numbers)	282	1794	2004
Electric Fans	(Thousand numbers)	1059	1716	2067
Electric Lamps	(Million numbers)	43.5	119.3	120.6
Fertilizers (Nitrogenous and Phosphatic)	(Thousand tonnes)	150	1059	1234
Soda Ash	(Thousand tonnes)	152	499	489
Caustic Soda	(Thousand tonnes)	101	371	385
Refined Petroleum Products	(Million tonnes)	5.8	17.7	18.6
Cement	(Million tonnes)	8.0	14.4	15.0
Cotton Cloth	(Million metres)	6738	7596	7547
Paper and Paper Board	(Thousand tonnes)	350	755	803
Electricity Generated	(Billion KWH)	16.9	55.8	60.7

Source : Economic Survey (1973-74)

DRUGS AND PHARMACEUTICAL INDUSTRY

The drugs and pharmaceutical industry in India is one of the priority sectors for development. With over 2200 units engaged in the production of a variety of products, the turnover of the industry has grown from Rs. 1000 million in 1962 to Rs. 3000 million in 1971. While production of most of the essential drugs has been registering improvement year after year, new items are being added to the stream and new plants for setting up additional capacities are being organised effectively.

In the antibiotics sector, installed capacity and actual output have improved for quite a few items. In 1971, the production capacity of penicillin, for instance, was 314 MMU and actual output was 223 MMU. The capacity and output of streotinycin, tetracycline, chloramphenicol and amphotericin were 235 tonnes and 179 tonnes; 149 tonnes and 83 tonnes; 69 tonnes and 47 tonnes and 2000 kg. and 313 kg. respectively. The capacity for halogenated oxyquinolines (anti-dysentery drug) is 118 tonnes and the production was 57 tonnes in the year. The anti-diabetic drugs, namely, tolbutamide, chloropropamide and insulin have respective capacities of 43 tonnes, 3 tonnes and 1500 MU and their output was 29 tonnes, 12 tonnes and 733 tonnes. Among anti-pyretics and analgestics, the installed capacity and production of aspirin was 560 tonnes and 927 tonnes, phenacetin 132 tonnes and 186 tonnes, paracetamol 75 tonnes and 20 tonnes and analgin 100 tonnes and 68 tonnes. Among anaesthetics, procaine was produced in 1971 to the extent of 40 tonnes while its capacity is 95 tonnes per year and oxylocaine with a capacity of 1500 kg. was produced to the extent of 4,155 kg.

In the alkaloids and allied drugs group, the production of caffeins was of the order of 11,660 kg. in 1971 in which year the capacity was 23,200 kg. The production of emotine hydrochloride, ephedrine, opium alkaloids, quinine, strychine and bruchnine respectively was 122 kg., 117 kg., 660 kg., 34,430 kg. and 10,020 kg.

The sulpha drugs units produced among other varieties, sulphadiazine, sulphapyridine, sulphasomidine, sulphathiazole, sulphanilamide, sulphadimidine, sulphaguanidine, sulphaphenazole and other sulpha drugs and have an installed capacity of 1020 tonnes per year; they were able to manufacture about 1010 tonnes in 1971.

Among Vitamins, the production in 1971 of Vitamin A was 42 MMU, Vitamin 'B 12' groups 139 kg., Vitamin C 195 tonnes, nicotinic acid and amide 29 tonnes, Vitamin B2 2245 kg., Vitamin D2 and D3 105 kg. and Vitamin B1 15735 kg.

In the public sector, M/s. Hindustan Antibiotics Ltd. is expected to achieve a turnover of Rs. 200 million by 1978-79, with the various expanded capacities of the company. By then, it is expected to meet between 25 to 30 per cent of the country's requirements of two major antibiotics - pencillin and streptomycin. The company is also diversifying its activities in the veterinary and agricultural products. Its agricultural antibiotic, auerofungin, holds promise for protecting food and cash crops against a large variety of fungal diseases. Another promising use is in the preservation of perishables like fruits and vegetables. Antiamoebin, a veterinary antibiotic has proved to be useful as a deworming drugas well as lactogenic agent. The company has also plans to enter the digestive and industrial enzyme field in a large way.

The two units of M/s. Indian Drugs and Pharmaceuticals Limited at Hyderabad and Rishikesh, again in the Public Sector, are also revealing signs of progress. The Rishikesh unit is engaged in the production of antibiotics and the Hyderabad unit in synthetic drugs.

While such has been the pattern of progress in the public sector projects, the various private units engaged in the line have also registered increases in production and expansion. During 1971, several new schemes for setting up capacities for manufacture of new items as also for expansion of the existing capacities have been licensed, including those for pheny butazone, plastic disposable transfusion sets, Vitamin E, rutin (Vitamin P), paracetanol, di-iodo hydroxyquinoline, theophyllin, aminophylline and caffeine and expansion in capacity for the production of items like sulphanilamide, capsules hard gelatine, Vitamin A, phenylbutazone, P.A.S. and its salts and thiacetazone.

The salient features of the Fifth Five Year Plan for further improvement in the drugs and pharmaceutical industry mainly relate to a fresh capital investement of the order of Rs. 2530 million as against the existing Rs. 2250 million, improvement in production value of pharmaceutical formulations to about Rs. 7000 million from the present Rs. 3000 million, increase in the pro-

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duction value of two public sector manufacturers to Rs. 1500 million from Rs. 450 million and allotment of about 5 per cent of total production (Rs. 50 million out of Rs. 350 million) for research and developmental activity. The export performance of the industry is expected to go up during the plan to Rs. 300 million against Rs. 100 million at present. In short, it is envisaged that the capacity of the industry will be doubled from the present capacity built over the last twentyfive years.

The Pharmaceutical industry in the country has by now recognised the importance of research in the development of new drugs. While major units have set up their research and development centres, the medium and small scale units are receiving assistance from the Government Research Centres. The National Chemical Research Laboratory at Poona, for instance, has been functioning towards achieving the twin objectives, namely, preparation of new intermediates for drugs and pharmaceuticals and synthesising new drugs, as also extracting the active pharmacological principles of reputed Indian medicinal plants. The Laboratory has also developed processes for the production of a number of drugs and pharmaceuticals, such as Vitamin C, Vitamin B_6, acriflavin, anti-diabetic agents like dimethyl buganide and phenethyl biguanide, calcium hypophosphite, phenacetin, theophylline and caffeine, colcine, berberine hydrochloride, carbimazole, sorbide nitrate, propoxyphene and clofibrate. Most of these drugs are already in production and utilising the know-how developed by the Poona Laboratory. The Laboratory has also developed a process for isolation of opium alkaloids such as morphine, codeine and baine in a pure form. A factory for implementing this process is being established at Neemuch (Madhya Pradesh) and is expected to produce worth Rs. 1 million every year. The current research programme of NCL includes process development work on xylit, extraction of morphine from lanced poppy capsules, chloroiodoquin, folic acid, and utilization of the byproducts of opium alkaloids industry, conversion of quinine to quinidine and synthesis of folk medicines in veterinary use.

Some of the reputed private manufacturers have made sufficient progress in the research of drugs. For instance, M/s. Alembic Chemical Works, Baroda has been able to evolve in their research unit a right blend of research programmes based on entirely indigenous technology. According to a Survey of the Organisation of Economic Cooperation and Development (OECD), the percentage of national turnover of the pharmaceutical industries spent on Research and Development is 1.6 per cent in India compared to about 5 per cent in Japan and about 7 to 10 per cent in France, Federal Republic of Germany, Italy, Sweden, U.K. and the U.S.A.

The drugs and pharmaceutical industry has been contributing its mite to the country's total improvement in export effort. In 1967-68, it secured foreign exchange worth Rs. 36.4 million, while in 1971-72 the export value rose to the level of Rs. 87 million. The contribution of Vitamins and pro-Vitamins to the export trade in the year was of the order of about Rs. 1 million while that of penicillin, streptomycin and other antibiotics was Rs. 10 million; opium alkaloids, cocaine, caffeine, quinine and other vegetable alkaloids, salts and derivatives Rs. 11.8 million; harmones Rs. 0.4 million and medicaments Rs. 59.5 million. In addition, pharmacy goods such as bandages were exported to the tune of Rs. 4.4 million.

In the major group of export, namely, medicaments, Ayurvedic and Unani medicines, homeopathic medicines, ointments and vaccine and proprietary patent medicines are important. These are exported mainly to countries like Sri Lanka, Kenya, Nigeria, U.K., Thailand, Australia, Japan, Saudi Arabia, Malawi and Arab Republic of Egypt. The export supplies of antibiotics are mainly made to Hong Kong, U.S.A., Ireland and Sri Lanka. Vegetable alkaloids are supplied among others to Eastern Europe, Japan, U.S.A. and German Federal Republic.

The Pharmaceutical industry in India has been thus making strides in product development and diversification, research and export progress. The international markets have come to recognise the quality competitiveness of Indian products, particularly in the medicament area and labour intensive pharmaceutical propucts. The industry has also been benefited by foreign collaboration, and planned investment programmes of the national Government. □

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POLAND OFFERS TO BUY RAILWAY WAGONS

M/s. Projects and Equipment Corporation, New Delhi are negotiating with a Polish firm, M/s. Kolmex, Warsaw for the supply of 4000 bogie flat wagons in association with M/s. Texmaco, Belgharia, Calcutta-56 and M/s. Braithwaite & Co., Hide Road, Calcutta-43 as well as for the supply of 1,000 four-wheeled covered wagons in association with M/s. Jessops, 63, N.S. Road, Calcutta-1. The wagons are supplied in semi-knocked down condition and the assembly in Poland is to be arranged by the buyers themselves. The deliveries are likely to be completed in 1974-76 and prices and other terms of contract are to be negotiated.

M/s. Projects and Equipment Corporation of India have already supplied over 2,800 wagons to a number of countries including Hungary, Korea, Poland, Sudan, East Africa, Sri Lanka and Burma. They have orders on hand for the supply of wagons to Poland, Yugoslavia and Iran, valued at about Rs. 450 million. The Indian industry has indeed made a good breakthrough in the wagon export field and its image as a supplier of quality equipment has come to be established in the world market.

During 1971-72, India's export trade in railway wagons amounted to Rs. 22.4 million (600 wagons) as against Rs. 18.8 million (463 wagons), according to the Engineering Export Promotion Council, Calcutta. Of the 1971-72 export value, 448 wagons to Hungary fetched Rs. 12.4 million while the wagons exported to Sudan secured Rs. 3.7 million, Ghana Rs. 1.26 million and Burma Rs. 0.7 million.

Presently, there are 11 wagon builders in India with a total capacity of 27,515 four-wheeler wagons per annum. The annual demand for wagons from Indian railways is estimated at about 12,000 units and as such the wagon industry has adequate capacity for releasing surpluses to the export market.

The export of wagons from India has been canalised through the Projects and Equipment Corporation, effective from August, 1972.

During the three years, 1969-70 to 1971-72, India received several export orders for wagons and many of these supplies have already been effected. The completed orders were for the supply of 120 covered wagons and 113 coaches to Taiwan, 1000 wagons to Hungary, 150 wagons to Ghana, 45 coaches to Thailand and 120 bogie wagons to Sudan and 100 tank wagons to East Africa. Of an order received from Yugoslavia for 1300 covered wagons and 2300 open wagons, 50 wagon set sub-assemblies and one prototype assembled wagons have so far been shipped. An order from Poland for 500 covered wagons has been partly executed and the remaining supplies are expected to be completed soon. Among the other pending orders are from Sudan for 43 wagons, from East Africa for 45 cattle wagons, from Sri Lanka for 40 timber wagons, from Iran for 492 wagons, from Iraq for 45 wagons and from Zambia for 6 coaches.

India's total export value of railway wagons, coaches and parts was Rs. 65.7 million in 1971-72, against Rs. 21.10 million in 1970-71.

EXPORT SUCCESS OF SMALL-SCALE FIRMS

Through the assistance of the Trade Development Authority, New Delhi, two small-scale firms engaged in the manufacture of industrial fasteners and electronic pocket calculators have succeeded in achieving a breakthrough in their export efforts.

M/s. Auto and General Engineering Company, Okhla Industrial Estate, New Delhi, recently concluded an initial export order for the supply of industrial fasteners worth $ 100,000 to the U.S. market. The firm was initially engaged in the manufacture of automobile testing equipment required for Defence purposes and were presented with National Awards for import substitution. They have now set up facilities for the manufacture of hot forged industrial fasteners. They have plans to establish a fulfledged unit for fastener production exclusively for export.

Another small-scale firm, M/s. U.M.S. Radio Factory Pvt. Ltd., Coimbatore, is a manufacturer of electronic products, particularly radios, tape recorders and record players. They have recently designed a pocket size electronic calculator for which a trial export order valued at Rs. 0.5 million has been received from the Federal Republic of Germany. The pocket size calculator designed by the firm is 12 x 67 x 44 mm in size, weighs 200 grams and incorporates solid state L.E.D. display to give bright glow of digits. It em re-chargeable batteries for operation and is able to perform functions like additions, subtractions, multiplications and divisions upto 8 digits. The Trade Development Authority which has helped the firm to secure the export order feels that the calculator has a bright opportunity for export.

The Small scale units in India have come to contribute a sizeable proportion of the country's total export effort every year. In the engineering field particularly, this sector is now able to offer a surprising variety of products for export on competitive terms of pricing and quality. That the above two orders have

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been secured from quality-conscious markets like the U.S.A. and the Federal Republic of Germany would testify the recognition being received by the export products of India's small scale industry from advanced economies. With rapid shifts being witnessed in the pattern of production in advanced countries towards sophisticated and capital intensive manufacturing areas, the future of exports from developing countries is assured for less-complicated products with a comparatively less input of know-how and capital. This is particularly so in regard to the labour intensive products in the engineering sector.

AUTOMOBILES ON EXPORT FRONT

India's automobile industry has come of age and ranks prominently among the country's engineering industries. During 1971-72, the exports of road motor vehicles totalled Rs. 119.80 million.

Lorries and trucks in assembled condition constituted the major area of export growth having secured Rs. 27.20 million in the above year. Arab Republic of Egypt was the leading destination having imported worth Rs. 9.65 million, followed by Sri Lanka at Rs. 7.35 million, Nigeria at Rs. 4.25 million, Yugoslavia at Rs. 2.30 million and Nepal at Rs. 2.10 million. Buses were the next important category having brought in about Rs. 19 million. Sri Lanka with an intake worth Rs. 9.10 million was the major buyer. Arab Republic of Egypt (Rs. 4.42 million), Nigeria (Rs. 2.68 million) and Bahrein Islands (Rs. 1.67 million) were among the other purchasing countries.

Besides, the export earning of other vehicles and accessories and parts during the year was : motor cars including jeeps Rs. 1.88 million; chassis with engines mounted for passenger motor cars Rs. 3.50 million; chassis for tractors and others Rs. 12.05 million; motor vehicle replacement parts Rs. 2 million; motor vehicle initial equipment Rs. 31.96 million and motor vehicle replacement parts Rs. 16.85 million.

Motor cycles, motor scooters, auto cycles, motor cycle parts and accessories, tractor parts, breakdown lorries and road tractors were the other items active in the export trade.

Singapore, Yugoslavia, Arab Republic of Egypt, Afghanistan, Sri Lanka, Singapore, Iran, Iraq, Nepal, Indonesia, Malawi, U.S.A., Uganda and Malaysia were the other major destinations for these items.

M/s. Mahindra and Mahindra, Gateway building, Apollo Bunder, Bombay one of the leading manufacturers of automobiles in the country, supplied abroad over 560 vehicles during the year ending October 1972. Their production of vehicles and parts in the year recorded sizeable increase. They have recently diversified their product range to include steel and machine tools.

India's automobile industry is making rapid strides in recent years. From merely assembly operations of imported vehicles until 1953, the industry has rapidly expanded to cover manufacturing activities of various types of vehicles in demand at home and abroad. The production of vehicles by the industry increased from year to year. From 24,788 numbers in 1961, the production of commercial vehicles rose to 40,865 numbers in 1971; from 21662 numbers in 1961, car production improved to 39325 numbers in 1971. Jeeps production looked up from 7,904 numbers to 11,053 numbers; motor cycles from 8,636 numbers to 39,730 numbers; scooters from 12,817 numbers to 67,212 numbers; three wheelers from 1267 numbers to 6146 numbers and mopeds and scooterattes from 2,634 numbers to 14,113 numbers.

In terms of value, the production shot up to Rs. 1269.62 million in 1971-72 from Rs. 90 million in 1960-61. The import content in the manufacture of vehicles has been reduced sizeably and presently it is in the range of 2 to 5 per cent.

AUTOMOTIVE TYRES AND TUBES IN EXPORT TRADE

India's automobile tyres and tubes industry has already carved a position in export markets. Its foreign exchange earning, which was of the order of Rs. 41 million in 1969-70, rose to Rs. 55 million in 1970-71 and further to over Rs. 70 million in 1971-72. These items are imported by a large number of markets including Burma, Mauritius, Iraq, Iran, Arab Republic of

Egypt, Fiji, Kenya, Sudan, Kuwait, Nepal, Australia, Rumania, Uganda, U.S.S.R., USA and Yugoslavia.

In 1971-72, tyres of trucks and buses constituted the major category which brought in Rs. 43.30 million, followed by tyres for off the road vehicles at Rs. 8.30 million, cycle tyres Rs. 3.88 million, motor tyres Rs. 3.07 million, tyres for other vehicles Rs. 1.43 million, tractor tyres Rs. 0.87 million and motor cycle tyres Rs. 0.12 million. Yugoslavia, Czechoslovakia, U.S.S.R., Sudan, Burma, Kuwait, Hungary, Thailand, Korea Republic, Rumania, Iraq, U.S.A., Guyana, Afghanistan, Austria, Indonesia, Peru, Nigeria, were the prominent buying countries. Besides tyres, a wide variety of tubes was supplied abroad during the year. Tubes for trucks and buses fetched Rs. 4.5 million while cycle tubes brought in Rs. 2.25 million. The export value of other categories was : tubes for motor cycles Rs. 0.60 million; tubes for motors Rs. 0.31 million and tractor tubes Rs. 0.11 million. Yugoslavia, U.S.S.R., U.S.A., Sudan, Czechoslovakia, Ghana, Korea Republic, Singapore, Rumania, Nigeria, Iraq, Indonesia, Guyana and Afghanistan were the major buyers.

M/s. Dunlop India Ltd., Chittaranjan Avenue, Calcutta-16, contributed over Rs. 32.2 million to the total tyres and tubes export trade during 1971-72. The firm has been able to supply their rubber manufactures to as many as 79 countries of the world including the U.K. and U.S.A. Recent addition to their overseas markets include Bangladesh, Bulgaria, France, Trucial Oman and Mozambique. Their export range includes a wide variety of products, including automotive tyres, cycle tyres and tubes, tyres for aeroplanes and bicycle rims. The firm has special facilities for production exclusively for export purposes.

As an export house, the firm has diversified its export range. For instance, recently it supplied sports goods to U.K. market. It has also supplied bicycle components abroad.

The tyres and tubes manufacturing industry in India consumes more than 50 per cent of the entire rubber production of the country every year. This dynamic sector produces almost all varieties of tyres and tubes and have the capability to cater to the requirements of even the most sophisticated consumers abroad. The production range of the industry today includes giant tyres and tubes, motor tyres and tubes, motor cycle tyres and tubes, scooter tyres and tubes, tractor tyres and tubes, cycle tyres and tubes, ADV tyres and tubes and aero tyres and tubes. The industry occupies a prominent place among the country's 54 priority industries and has been permitted to double its production as compared to its existing licensed capacity.

In the organised sector, the production of giant tyres was of the order of 2.30 million numbets in 1971 against the installed capacity of 2.20 million numbers spread over among 8 units. The production of giant tubes was 2.04 million numbers against an installed capacity of 2.20 million numbers. Against an installed capacity of 24.38 million numbers, the production of cycle tyres by 11 units engaged in the line was 19.20 million numbers while the production of cycle tubes was 12.42 million numbers against an installed capacity of 22.20 million numbers. The figures of actual production, installed capacity and the numbers of units engaged in the manufacture of other tyres and tubes in 1971 were : scooter tyres 47,261 numbers; 450,000 numbers and 8 units; 38,5600 numbers, 450,000 numbers and 6 units.

MALAYSIAN ORDER FOR COMPLETE SUGAR PLANT

India-made sugar mill machinery has firmly entered export markets. The export value of the machinery was of the order of Rs. 11 million in 1971-72. Sugar plant and mill machinery were mainly exported to Uganda, German Federal Republic, Iran, Sri Lanka, and Kenya while sugar cane crushers were supplied among others to Nigeria and Liberia. Lately, a sugar diffuser was exported for the first time to Malaysia.

M/s. Walchandnagar Industries Ltd., Construction House, Ballard Estate, Bombay-1, have recently secured an export order from Malaysia worth Rs. 45 million for the supply of a complete sugar plant with a daily crushing capacity of 2500 tonnes. The Indian firm has to complete the project within 22 months ending September 1974.

Besides sugar mill machinery, the firm is engaged, among other items, in the production of water tube boilers, high speed centrifugal gears, gear boxes and pinions. The firm has plans to enhance capacity for these items.

India has made rapid progress in the production of sugar mill machinery during the last two decades. The production of the industry which was worth a meagre Rs. 1 million in 1951, rose to Rs. 124 million in 1969, Rs. 146 million in 1970 and Rs. 164 million in 1971. The installed capacity stands at Rs. 210 million (1971) as against a total licensed capacity of Rs. 230 million. The industry is today in a position to supply complete sugar plants with a capacity as high as 3500 tonnes of cane crushing per day from the stage of crushing of sugar cane to the stage of sugar refining. It has also achieved a high indigenous content; for a complete sugar plant of 1250/2000 tonnes of crushing capacity per day, the pack value of import content is about 8 per cent of the value of complete plant.

AIR CONDITIONERS TO POLAND

Against an order claimed to be the largest single export deal ever concluded by India for export of room air conditioners, an Indian manufacturer has recently completed shipment of 1000 room air conditioners to Poland. This also happens to be the first order placed by Poland for this equipment from any country. The Indian supplier, M/s. Voltas Ltd., Bombay secured this order against stiff competition.

The overall export of refrigerators and air conditioning equipment and appliances including refrigerators has witnessed noteworthy improvement during the last decade. From a mere Rs. 0.30 million in 1960-61, the export value rose to Rs. 6.13 million in 1970-71 and Rs. 8.51 million in 1971-72. In 1971-72, of the total export value, air conditioning and refrigeration plants alone fetched about Rs. 5.85 million. Nigeria and Malaysia were the major importers with an intake of Rs. 1.15 million and Rs. 1.08 million. Sri Lanka, Cyprus, Greece, Singapore, Thailand, Indonesia and Arab Republic of Egypt were among other importers. The share of air conditioners and parts was Rs. 0.70 million, the major buyers being Zambia and Iraq. Besides air cooling machinery, the exports effected during the year included refrigerators, ice making machinery, water coolers and accessories.

With 7 units in the organised sector, the actual production of room air conditioners in India was 21,600 numbers in 1971 as against 17,040 numbers in 1970. The installed capacity of the industry was of the order of 32,280 numbers and 28,280 numbers respectively in these years.

TELECOMMUNICATION EQUIPMENT ON EXPORT STREAM

India's exports of telecommunication apparatus totalled Rs. 30 million in 1971-72 as against Rs. 27 million in the preceding year.

Of this, radio broadcast receiving sets netted worth Rs. 21.70 million, accounting for 70 per cent of the entire export value. Transistor radio receiving sets, domestic radio receivers, radio phonographs, other radio receiver sets and components and parts (excluding loudspeakers, receiving valves and tubes) were the important items supplied mainly to Sudan, U. K., Congo People's Republic, Ethiopia. Czechoslovakia, Ireland, Sweden, Congo Democratic Republic, Syria, Iraq and Bulgaria during 1971-72.

Telecommunication equipment fetched Rs. 8:23 million. A wide range of items was supplied in this category to overseas markets during the year. Telephone and telegraph equipment, amlifiers, microphones, loudspeakers, microphone parts, telephone apparatus and instruments, telegraph apparatus and instruments, transmission and reception apparatus, wireless reception with transmitting apparatus and parts, and radar radio navigational aid apparatus and parts were the prominent export items. U. K., Singapore, Kenya, Iraq, Iran, Australia, Malaysia, Sri Lanka, Burma, Sudan, Nigeria, Greece, and Korea Republic were the leading destinations.

M/s. National Radio and Electronics Company Ltd., Bombay, have recently entered the export field by securing orders valued at Rs. 580,000 from Sudan and Fiji Islands (1971-72).

The Bombay firm's production range includes radio receivers, loudspeakers, paper capacitors, electronic office machines, stereo and mono amplifiers and voltage stabilisers. They have introduced five new models of radio. Their sophisticated industrial and business electronic products are manufactured with indigenous know-how, developed by the Research and Development Laboratories of M/s. Tata Electric Companies.

India's electronics and telecommunication industry is well established today. With the use of modern science and technology, further increase in the production of sophisticated equipment can be achieved by the sector. Production of radio receivers increased from 1.77 million numbers in 1970 to 1.97 million numbers in 1971; T.V. receivers from 5128 numbers to 7790 numbers; record players from 48,520 numbers to 69,090 numbers; computers from only 6 numbers to 23 numbers and electric instruments/equipment from 249 numbers to 325 numbers.

The production of telecommunication equipment too increased substantially. Production of teleprinters increased from 5124 numbers to 5481 numbers. Besides production of electronic components too recorded sharp increase during 1971.

In the field of electronics and telecommunications, 14 new items were manufactured in 1971. These are single channel analyser, frequency counter, timers, flashers, voltage dependent resistors, stereo equipment, automatic solid state voltage regulator and stabiliser, solid state variable speed drive, electronic desk calculator, single phase preventor and magnetic tapes.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT PERFORMANCE OF HANDLOOM PRODUCTS

India's export trade in handloom products in 1971-72 fetched Rs. 300 million as against Rs. 261 million in 1970-71. In the first three-quarters of 1972-73 (April-December 1972), the export trade is estimated to have secured Rs. 258 million.

Export of cotton handlooms have particularly witnessed uptrend. Their foreign exchange value was of the order of Rs. 126 million in 1969-70 which rose to Rs. 159 million in 1970-71 and Rs. 227 million in 1971-72. In the first three quarters of 1972-73, the estimated export value of these handlooms was of the order of Rs. 48 million. The offtake of silk handlooms, however, declined from Rs. 100 million in 1970-71 to Rs. 71.5 million in the subsequent year. In the period April-December 1972, this variety fetched Rs. 59 million. The decline in silk goods was mainly due to the decreased offtake of mulberry silk products. This decrease was owing to the change in fashion trends abroad, rise in cost of tasar cocoons and competition from countries like Thailand and China.

Intensive efforts are underway to sustain the growing tempo in the export of cotton handloom products and they are being increasingly introduced in non-traditional markets. Cotton handloom goods were included as a separate item in the Indo-American Cotton Textile Agreement in 1970. The U.S. market freely imports cotton handloom fabrics and 'India items' which mostly include embroidered goods.

During October 1972 - September 1973, a quota of 5 million square yards to U.S.A. is available for cotton handloom made-ups including garments. As this quota is inadequate, it was stipulated that garments be allowed freely till March 1973 against the quota of relevant mill made-ups; such diversion is permissible under the Indo-U.S. Cotton Textile Agreement. As regards, other made-ups, a quota of 3.2 million sq. yards was released for October 1972 - January 1973. The Policy for the subsequent period is under finalisation.

Consequent on the imposition of duty on Commonwealth textiles, effective from January 1972, the U.K. authorities offered a quota of one million square yards for Indian cotton handloom goods and 40,000 sq. yards for silk handloom products. As exports of the cotton and silk handloom goods to U.K. were of the order of 7.8 million and 0.45 million square yards respectively, the above quotas are inadequate. Pursuant to the discussion between the Indian and U.K. Governments, the latter agreed to raise the duty free cotton and silk handloom goods from India to 8 million and 1 million square yards respectively. The Indian authorities have again taken up with the U.K. Government for further raising these quotas.

India has succeeded only partially in her efforts with the European Economic Community to secure unrestricted duty-free entry for her handloom products. The Community presently grants a quota of 1 million each for handloom cotton fabrics and handloom silk fabrics. The other European countries including Switzerland, Norway, Sweden, Denmark and Finland permitted duty-free and quota-free exports of handloom products from India. Supplies to East European markets are permitted under the Rupee-Agreement with them.

The handloom silk industry had a boom period during 1969-70 and 1970-71. In the subsequent years, various factors were responsible for the fall in exports, such as the growing competition from Thailand and the People's Republic of China, fluctuations of raw material prices, high production costs and changing fashion trends.

To improve the quality of Indian silk goods for exports, the Central Silk Board has attemped to bring about quality control in stages. Visual inspection in general quality and testing for the purpose of 'Certification of fibre purity and dimensional specifications' declared by an exporting party has been introduced in respect of many items of silk goods. Quality control inspection with reference to minimum prescribed standards has been introduced effective from January 1965 in respect of tasar and tasar mixed natural silk fabrics. Also there are provisions for inspection of the textural quality, weaving defects and verification of dimensional specifications in respect of silk scarves and silk stoles. The question of bringing the other silk items including ready-made garments under the purview of the quality control and inspection scheme is being examined currently by the Central Silk Board, Bangalore.

EXPORT POSITION OF CHEMICALS AND ALLIED PRODUCTS

India's export performance of chemical-based products has revealed signs of rejuvenation in recent months. Their export value registered a sharp increase from Rs. 182 million in 1964-65 to Rs. 379 million in 1970-71. During the year 1971-72, however, there was a decline to the level of Rs. 333 million. But in the first three quarters of 1972-73 (April-December, 1972), the exports improved to an estimated level of Rs. 286 million as against Rs. 255 million in the same period of the preceding year.

The chemical based-products referred to above include rubber manufactured products, footwear (rubber and canvas with rubber soles), automobile tyres and tubes, paints, varnishes and allied products, glass and glassware, ceramics and allied products, processed minerals and refractories, paper and paper board, paper products, books and publications, fertilizers including crushed bones and bonegrist, plywood and plywood products including wooden furniture and wood and cork manufactures and miscellaneous items like pyrotechnical articles, matches, dyeing and tanning extracts, glue and gelatine, detonators and explosives, graphite electrodes, activated carbon and coconut-shell charcoal.

Among the specific products whose export performance has revealed uptrend in the first three-quarters of 1972-73 were footwear, auto tyres and tubes, glass and glassware, ceramics and allied products, paper products, books and publications, fertilzers and plywood. There was, however, a decline in respect of rubber manufactured goods, paints, varnishes and allied products, processed minerals and refractories and paper and paperboard.

The export value of footwear was of the order of Rs. 22 million in 1969-70. It rose to Rs. 23.2 million in 1970-71 and Rs. 31.2 million in 1971-72. In the first three quarters of 1972-73, its estimated exports were worth Rs. 27.2 million as against Rs. 24.8 million in the same period of the preceding year. Export performance of auto tyres and tubes also showed continuous improvement - Rs. 41.1 million in 1969-70, Rs. 55.4 million and Rs. 67 million in the following two years. As compard to their exports at Rs. 49 million in April-December 1971, the same period of the subsequent year registered improvement to Rs. 51 million.

The foreign exchange earning from paints and varnishes group increased from Rs. 32.5 million in 1969-70 to Rs. 37.6 million in 1971-72. Glass and glassware exports which declined to the level of Rs. 19.4 million in 1971-72 as against Rs. 21.6 million in the preceding year, have picked up again in the following year and in the first three quarters of 1972-73 totalled Rs. 24.4 million as compared to only Rs. 13.8 million in the same period of 1971-72. Fertilizers including crushed bones witnessed gradual rise from Rs. 42.3 million in 1969-70 to Rs. 45.7 million in 1970-71 and Rs. 54.8 million in the subsequent year. The first three quarters of 1972-73 registered their export earnings at Rs. 48.3 million in contrast to Rs. 37 million in the same period of the preceding year. Again, the export performance of books and publications which was only Rs. 14.7 million in 1971-72 rose to as much as Rs. 15.6 million even in the first three quarters of 1972-73.

With a view, to promoting the overall exports of chemical-based products falling under the charge of the Chemicals and Allied Products Export Promotion Council, Calcutta, the Government of India have devised certain export promotion steps. Among them, the exporters are allowed to import items which are either not available indigenously or are available at high prices. Railway freight concession is also being offered on export consignments. These products are being included in the bilateral trade agreements too. An active programme of export promotion has been taken up through the media of market survey, organising sales-cum-study teams and effective publicity abroad on the qualitative and price-competitiveness aspects of these products.

RUBBER MANUFACTURES ON EXPORT STREAM

India's exports of rubber manufactures in the period of first five months of 1972-73 (April-August 1972) totalled Rs. 33.57 million as against Rs. 27.06 million worth exported in the comparable period of the preceding year. The exports during the period under review of 1972-73 improved by about 25 per cent over the exports effected during the last year (April-August, 1972).

Articles of rubber constituted the foremost category which registered a sizeable uptrend. The export value was of the order of Rs. 32.68 million, accounting for more than 95 per cent of the entire export earning. During the preceding year (April-August 72) the foreign exchange value was nearly Rs. 26 million.

Among a large number of items exported under this category, tyre cases for trucks and buses netted Rs. 19.65 million. Yugoslavia was the leading buyer whose intake was valued at Rs. 6.83 million (21469 numbers), followed by Czechoslovakia at Rs. 6.19 million (27,511 numbers), Sudan at Rs. 1.17 million (5591 numbers), U.S.S.R. at Rs. 1.12 million (2455 numbers), Kuwait at Rs. 0.86 million (3930 numbers), Iraq at Rs. 0.93 million (4548 numbers), Korea Republic at Rs. 0.62 million (2754 numbers) and Mauritius at Rs. 0.29 million (1346 numbers). Tyre cases of other vehicles netted Rs. 1.25 million. Nepal, Yugoslavia, U.S.A., Bangladesh and Arab Republic of Egypt were the prominent markets. Tyre cases of motor cars brought in Rs. 1.40 million. Yugoslavia, Iraq, Sudan and Hungary were prominent importers. Tyre cases of cycles was yet one more item which earned as much as Rs. 1.97 million with U.S.A., Puerto Rico, Afghanistan, Guyana and Austria as leading buyers.

Tyre cases for motor cycles, tractors, off the road vehicles and tyre flaps, were other items active in export trade.

Inner tubes of trucks and buses fetched Rs. 2.03 million (82,494 numbers). Czechoslovakia, Yugoslavia, Kuwait, Sudan, and Iraq were prominent destinations. Cycle tubes, motor tubes, motor cycle tubes, off the road vehicle tubes, tractor tubes and tubes for other vehicles were the other varieties of tubes prominent in the exports.

Besides, hygenic and pharmaceutical articles of rubber brought in Rs. 0.16 million. Federal Republic of Germany, Burma, Thailand and Afghanistan were the important markets. Transmission conveyor or elevator belts and belting of rubber earned Rs. 0.14 million. Philippines, Bangladesh, Indonesia and Malaysia were the prominent purchasing countries.

In addition to these, the export value of other articles of rubber (unhardened and hardened rubber) was of the order of Rs. 1.06 million.

Materials of rubber was the second category which earned Rs. 0.88 million in the period of review of 1972-73. In the comparable period of 1971-72, its export value was Rs. 1.06 million. In this category, hospital sheeting of unvulcanised rubber, strips, camel back of unvulcanised rubber, hoses of vulcanised rubber, piping tubes of vulcanised rubber and scrap waste powder of hardened rubber were exported. Among the prominent Importing countries were Bangladesh, Tanzania, Kenya, Burma, Iraq Malawi, Afghanistan, Bahrein Islands and Sri Lanka.

TRADE WITH NEIGHBOURING COUNTRIES

India has been maintaining close trade relations with the neighbouring countries, namely, Bangladesh, Burma, Nepal and Sri Lanka. Trade agreements with these countries have been entered into and the two-way trade traffic has been brightening up year after year.

A Treaty of Trade and Transit was concluded between India and Nepal in August 1971. A Trade Agreement with a special feature of a limited payments arrangements for balanced trade in commodities of special interest was concluded between India and Bangladesh in March, 1972. A new Trade Agreement was also concluded in 1971 between India and Burma where the emphasis is on cooperation and trade to mutual advantage. For promotion of trade between India and Sri Lanka, a Trade Agreement is supplemented by a standing committee for economic cooperation between the two countries.

Indian exports to Nepal and her imports from that country amounted to Rs. 284 million and Rs. 103 million respectively during 1971-72. Of the commodities exported to Nepal, the value of cotton fabrics was about Rs. 7.5 million. Petroleum products fetched Rs. 5.3 million while machinery and transport equipment Rs. 2.1 million. Medicinal and pharmaceutical products, cement, metal manufactures, spices, tea and fruits and vegetables were among the other products supplied. Rice and malted butter were the major items imported by India from Nepal in the year.

Indian exports to Burma totalled Rs. 108 million, of which cotton yarn and thread fetched Rs. 31.3 million, jute manufactures Rs. 24.4 million, iron and steel Rs. 2.3 million. Coal, coke and briquettes, machinery and transport equipment, metal manufactures and rubber manufactures were the other products supplied to that country. As in respect of Nepal, from Burma also India imported rice mainly. These imports totalled Rs. 4.5 million as against the total import bill from Burma at Rs. 5.9 million.

India's exports to Sri Lanka in 1971-72 were of the order of Rs. 21.2 million. Machinery and transport equipment was the major group of export at Rs. 5.4 million, followed by sugar preparations at Rs. 4.3 million, cotton yarn and thread Rs. 2.7 million, spices Rs. 1.7 million, fish Rs. 1.3 million, cereal and cereal preparations Rs. 1.2 million. Bidi wrapper leaves, chemical elements and compounds, non-ferrous metals and medicinal and pharmaceutical products and jute manufactures were the other products supplied to Sri Lanka. Of the total import bill from Sri Lanka at Rs. 14.5 million in 1971-72, purchase of copra was as much as Rs. 12.3 million.

Indian exports to Bangladesh were of the order of Rs. 380 million in 1971-72. In the first five months of 1972-73 (April-August 1972), the export value was Rs. 332 million, of which wheat supplies fetched Rs. 183 million, raw cotton Rs. 30 million, unmanufactured tobacco Rs. 19.6 million, cement Rs. 12.7 million, cotton yarn and thread Rs. 7 million, galvanised and corrugated sheets of iron and steel Rs. 4 million and medicinal and pharmaceutical products Rs. 3.5 million. Milk and cream, paper and paperboard, castor oil, wire rods, pig iron and articles made of pulp were among the other items supplied. Indian imports from Bangladesh during April-July, 1972 amounted to Rs. 2.6 million.

EXPORT TRADE IN MONKEYS

Among the wide variety of products exported by India, even monkeys have come to contribute to the foreign exchange earnings. The major supplies are in the direction of United States. The U.S. market absorbed these animals worth Rs. 2.6 million during 1971-72 (37,470 numbers). In the preceding year, U.S.A. purchased 24,460 numbers at a value of Rs. 1.83 million. The total export value from this category was of the order of Rs. 3.8 million in 1971-72 and Rs. 2.6 million in 1970-71.

U.K. was the other important market having purchased 4160 numbers at Rs. 3.3 million. The Soviet Union imported 4300 numbers at a value of Rs. 0.32 million while Yugoslavia purchased 2000 numbers at Rs. 0.17 million.

Italy, Netherlands, Japan, Czechoslovakia, German Federal Republic, Hungary and Canada were among the other buyers.

INDO-CZECH AGREEMENT ON IRON EXPORT

Minerals and Metals Trading Corporation of India (MMTC) has recently concluded a contract for export of about 1 million tonne of iron ore to Czechoslovakia during 1973-74. This represents an increase of 1.75 per cent over the previous year. The Corporation has also concluded a separate agreement for supply of a cumulative quantity of 2.1 million tonnes of iron ore to that country during 1974-75 and 1975-76.

After Rumania, Czechoslovakia is the second largest buyer of Indian iron ore amongst East European countries. During 1971-72, it bought about 5,50,000 tonnes of iron ore. Total export earning of this ore was of the order of Rs. 1047 million (about 20 million tonnes) in 1971-72 with Japan as the major buyer at Rs. 816 million (16.3 million tonnes). With an estimated reserve of 10,000 tonnes, exclusive of substantial low grade deposits, iron ore is country's largest mineral in terms of reserves. India ranks seventh among the iron ore producing countries while production wise the country occupies ninth position among the nations.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

TELESCOPIC HOIST MANUFACTURED

For the first time in India, the Heavy Machine Building plant, a unit of the Heavy Engineering Corporation, Ranchi has succeeded in manufacturing a telescopic hoist. The hoist was meant for repairing the lining of a 108 tonne convertor installed in the steel melting shop at Bokaro. It can move on rails and is fitted with platform that can bear heavy weight upto a height of 11.4 metres from floor by means of hydraulically operated telescopic cylinder stem.

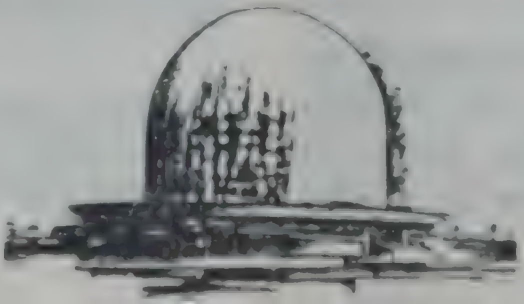
AROMATICS PROJECT OF THE GUJARAT PETROCHEMICALS

The D.M.T. unit of the Aromatics Project of the Gujarat Petrochemicals Complex is expected to start trial production soon. The unit has been mechanically completed and pre-commissioning tests are underway. The Xylenes part of the Aromatics project is also to be soon completed mechanically and its trial production is expected to start in May this year. The Aromatics Project of the complex is to have an annual capacity of 24,000 tonnes of D.M.T. used for the manufacture of polyester fibre, 21,000 tonnes of ortho-xylenes used for making Phthalic Anhydride and 25,000 tonnes of mixed-xylene used for making solvents.

Detailed engineering of the Olefins project (Naphtha Cracker) of the petro-chemicals complex is now underway. Major equipment, both indigenous and foreign has been ordered and civil construction is also under progress. The downstream units of the Olefins project are for the manufacture of Polypropylene, Acrylonitrile, Ethylene Glycol, Detergent Alkylate and Synthetic Rubber.

NUCLEAR CO-OPERATION WITH FRANCE

India's Department of Atomic Energy and M/s. Stein Industries of France, a part of the big C.G.E. Group, have signed a technical cooperation agreement covering equipment for fast breeder nuclear reactors. M/s. Stein Industries will contribute to the building of a forty thermal MW sodium-cooled experimental fast breeder reactor in India, intended as a pilot project for a series of similar units on a large scale. The French company's role concerns the supply of sodium-heated steam generators and heat exchangers.



TREND IN ALUMINIUM PRODUCTION

India's aluminium production during 1971-72 more or less maintained the level achieved in 1970-71. It was over 179,000 tonnes as against 178,000 tonnes.

Of the total production, M/s. Indian Aluminium produced 78,580 tonnes while the share of M/s. Hindustan Aluminium was of the order of 78,503 tonnes. Besides, two more units, namely, M/s. Madras Aluminium and M/s. Aluminium Corporation of India produced 14,195 tonnes and 7825 tonnes respectively.

The aluminium Industry has been witnessing steady increase in production. It rose from 120,000 tonnes in 1968 to 133,000 tonnes in 1969, 161,000 tonnes in 1970 and 178,000 tonnes in 1971.

India's foreign exchange earning from the overseas supply of aluminium and its products amounted to Rs. 34.00 million in 1971-72. Of this, Rs. 27.70 million (5936 tonnes) were secured by bare aluminium conductors alone, accounting for nearly 80 per cent of the entire export value. Iran with an intake worth Rs. 12.04 tonnes was the top most buyer, followed by USSR at Rs. 10.90 million, Singapore Rs. 1.50 million, Yugoslavia at Rs. 1.37 million and Sudan at Rs. 0.47 million.

The export earning of other aluminium items was : aluminium foils Rs. 1.72 million; unwrought aluminium and alloy Rs. 0.60 million; aluminium bars and rods Rs. 0.90 million and aluminium wire Rs. 0.24 million. Besides, aluminium circles, sheets, plates, powder, flakes, tubes, pipes and fittings for tubes and pipes were the other items active in the export trade.

EXPANSION OF GUJARAT REFINERY ENVISAGED

The Indian Oil Corporation has envisaged the expansion of annual capacity of the Koyali (Gujarat) Refinery to 7.3 million tonnes. The main units proposed to be added to the existing refinery with a current annual capacity of 3.6 million tonnes, will include a new distillation unit and a vacuum column for production of bitumen and light diesel oil and a bitumen unit. The expansion of the refinery envisages processing of imported crude in addition to indigenous crude. The imported crude is to be received at offshore terminal in the Gulf of Kutch and transported through a pipeline to Koyali. The feasibility report prepared by the Indian Oil Corporation recommending the expansion of the Koyali project has placed the cost of the expansion of the refinery at about Rs. 280 million, of which the foreign exchange component is likely to be about Rs. 77 million.

Currently, there are five public sector refineries and 4 private sector refineries in the country with a total refining capacity of 20 million tonnes. The refining capacity is expected to touch 24 million tonnes, once the new refinery at Haldia (2.5 million tonnes) and the Cochin Refinery expansion (1 million tonnes) go on stream.

The total demand for petroleum products in India is estimated to go up to 44.6 million tonnes by 1978. It is targetted that the total refining capacity in the country will reach 43 million tonnes by that year to meet this demand. India's Planning Commission which has estimated the demand and capacity expansion positions, has suggested that the targetted capacity for 1978 can be realised by setting up two grass root refineries at Mathura (6 million tonnes) and at Goa (4 million tonnes) as also expanding certain existing refineries like Koyali, Haldia and Barauni by a total of 7.5 million tonnes.

PIG IRON DESPATCHES FROM BOKARO

The cumulative despatch of pig iron from the Bokaro Steel plant since the inauguration of its first blast furnace in October 1972 amounted to 229,635 tonnes consisting of 135745 tonnes for home sales and the rest for export to the Soviet Union.

The blast furnace of the Bokaro plant has attained 94 per cent of its rated capacity in February 1973; the plant produced 69670 tonnes of pig iron as against 68,000 tonnes in the previous month. In the month pig iron despatches from the plant amounted to 61,460 tonnes consisting of 44,960 tonnes for home sales and 16500 tonnes for export.

The Bhilai Steel plant has succeeded in working at its rated capacity of 2.4 million tonnes during February 1972 for the first time since it developed its rated capacity to the tune of 2.5 million tonnes.

NEW CARGO LINER LAUNCHED

The 13,900 DWT cargo liner M.V. "Vishva Bandhan" has been launched recently at Hindustan Shipyard, Vishakhapatnam. This was the sixty-third vessel launched in the shipyard and the twenty-eighth ship built by them for the Shipping Corporation of India.

The entirely designed shipyard 'Vishva Bandhan' is the fourth of a new series of ships with machinery, three-quarter aft. A 60 ton. derrick on foremast is fitted on the liner for lifting heavy cargo. As in respect of the earlier counterparts, the liner is being built to conform to highest classification of Lloyds Register of Shipping.

The Vishakhapatnam Shipyard has so far built and delivered 59 vessels of different sizes aggregating about 495,880 DWT.

PROGRESS OF KANDLA FREE TRADE ZONE

With fifteen industrial units having been commissioned and another 19 in various stages of implementation, the Kandla Free Trade Zone has succeeded in increasing earning from Rs. 748,000 in 1966-67 to about Rs. 12 million during 1972-73. To improve the performance of the industrial units in the zone, infrastructural transport facilities have been substantially improved and the Kandla port is now connected with broad gauge railway system as also a daily air service to Bombay; it is now on national highway.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

SORBITOL FROM CANE SUGAR

The National Chemical Laboratory (NCL), Poona, have recently developed a process to produce sorbitol which is a basic raw material required in the manufacture of Vitamin C. The process consists of catalytic reduction of invert sugar.

Sorbitol syrup finds extensive application in moisture conditioning and quality improvement of cosmetic creams, lotions, tooth paste, glue specialities, synthesis of certain resins and surface active agents. It is also used as bodying agent for paper, textiles and liquid pharmaceuticals (e.g. elixir syrup). Mannitol, a bye-product in the process also finds use in medicines and explosives, in the fermentation industry and in the manufacture of synthetic resins.

Currently, the established capacity for the production of sorbitol is estimated at 600 tonnes per year. Some quantity of mannitol is also being produced. With the rising domestic demand for these materials, imports have become necessary and in 1969-70 and 1970-71 about Rs. 200,000 worth of sorbitol (46 tonnes) and Rs. 100,000 (over 8 tonnes) had to be imported. The indigenous development of the process is now expected to increase domestic availability.

Most of the raw materials required in the process including sugar, caustic soda, filter aid and ethlyl alcohol are available within the country. The plant and equipment required for the process can also be fabricated indigenously.

It is estimated that for a plant capable of producing 300 tonnes, the capital outlay would be only around Rs. 2 million.

IMPROVED METHOD FOR CONSTRUCTING COMPACTION PILES

The Central Building Research Institute (CBRI), Roorkee, has developed an improved process for constructing compaction piles which are particularly useful in location with high water table where cement concrete with high water cement ratio has to be placed through a tremie pipe and any compaction of concrete or soil around is not possible by normal means.

In the process developed by CBRI, the concrete is placed directly in dry bore or through a tremie pipe under water. Immediately after placing of concrete, the reinforcement cage wrapped around a steel pipe is driven in to it with a hammer. As the reinforcement is driven, it drags the concrete along compressing it and soil all round. More and more concrete is simultaneously poured in to keep it level with the ground. After the driving is completed, the pipe is also filled with concrete and withdrawn leaving a fresh core of concrete.

These piles being simple to construct can be easily adopted in difficult soil conditions providing economical footings. Bearing capacity of such piles can be worked out from an empirical relation developed using the dynamic cone test values developed by CBRI.

The foundations of the Fire Research Building of CBRI have been designed and constructed using compacted piles. An economy of about 20 per cent was achieved on the cost of foundation.

Know-how is available from CBRI for a process of constructing bored piles in loose sandy soils when the compaction of concrete as well as compaction of soil around the bore is affected simultaneously by driving reinforcement through freshly laid concrete. This increases the bearing capacity of piles by 50 to 100 per cent.

CONDENSING UNIT FOR REFRIGERATION DEVELOPED

The Virus Research Centre of Indian Council of Medical Research, Poona, has recently developed knowhow for the production and application of virus lyophilizer. The basic condensing units, an ultra low temperature (—50°C–to – 90°C) for the production of refrigeration systems applicable in making several appliances require low temperature treatment (lyophilisation).

The Virus developed can be useful in the manufacture of ultra low temperature storage cabinets having capacities from 1.5 to 6.5 cubic feet; shelf type lyophilizers for vaccines, ampoule type lyophilizers and plasma drying plant.

Such appliances are currently being imported into India and some of them were received as gifts from international organisations such as the World Health Organisation, United Nations International Children Emergency Fund. The domestic demand for lyophilizers and other ultra low temperature appliances is likely to increase rapidly in view of its application in biomedical research laboratories, pharmaceutical laboratories, veterinary research laboratories, vaccine producing laboratories, hospitals and commercial estabilshments. It is felt that once the domestic production of these appliances is established, there will be even scope for their export.

The Virus Research Centre has succeeded in its experimentation for achieving temperatures below –40°C and up to –70°C by utilizing freon 22 as a refrigerant alongwith condensing units of the required capacity. It has also succeeded in producing temperature up to –90°C by using freon 12 to condense freon 13. At –20°C, it is further used for producing temperatures up to –90°C. By using the freon 22 refrigeration system, the Centre has also designed and fabricated lyophilizer machines for Viruses at –65°C. Using an ultra low temperature refrigeration system, their designed fabrication of –60°C shell freezing machine also proved to be successful.

Most of the plant and machinery required for the above processes are available indigenously although the gas charging units are to be imported. The equipment required includes sheet metal working machinery such as press brakes, sheering machines, bending, folding, seaming, and roller machines as well as arc welding, spot welding, gas welding, argon welding and spray painting machines.

The major raw materials and components required for the above processes including M.S. sheets, G.I. sheets, Brass sheets, M.S. Angles, Copper tubing of refrigeration grade and refrigeration fittings are also available indigenously.

PRODUCTION ESTIMATES FOR SELECTED INDUSTRIES

Item	Unit	1970-71	1971-72	1973-74	1978-79
Food Grains	Million tonnes	108.42	104.66	115.00	139.90
Coal	Million tonnes	74.30	74.00	80.00	141.20
Iron ore	Million tonnes	22.50	23.20	42.00	66.50
Sugar	Million tonnes	3.70	3.10	4.20	5.90
Cotton Cloth	Million metres	7596	7547	8500	10703
Art Silk Fabrics	Million metres	947.00	968.00	1200.00	1513.00
Jute Manufactures	Thousand tonnes	958.00	1129.00	1300.00	1636.00
Paper and Paper Board	Thousand tonnes	755.00	803.00	850.00	1327.00
Newsprint	Thousand tonnes	37.00	30.00	65.00	159.30
Fertilizers (Nitrogenous)	Thousand tonnes	830.00	952.00	1600.00	3912.00
Fertilizers (Phosphatic)	Thousand tonnes	229.00	278.00	450.00	1174.00
Sulphuric Acid	Thousand tonnes	1053.00	975.00	1500.00	3349.00
Petroleum Products	Million tonnes	17.10	18.60	20.50	36.00
Cement	Million tonnes	14.40	15.00	18.00	26.80
Electric Motors	Million H.P.	2.70	2.30	3.45	5.65
Radios	Million numbers	1.80	2.00	3.30	3.90
Pig Iron for Sale	Million tonnes	1.30	1.00	2.00	3.80
Alloy and Special Steel	Thousand tonnes	350.00	323.00	350.00	518.00
Aluminium Ingots	Thousand tonnes	166.80	181.50	210.00	423.00
Electricity Generation	Billion KWH	55.80	60.30	78.00	129.30

Sources : Economic Survey 1972-73 and Approach to the Fifth Plan 1974-79.

HIGHLIGHTS OF REVISED INDUSTRIAL POLICY

In the context of the approach to the Fifth Five Year Plan (1974-79), to stimulate growth in priority industries and to effectively enforce the realization of social objectives, India's Industrial Licensing policy has been revised in February this year. The Revised policy will be within the durable framework of licensing and other connected policies consistent with the basic principles of the country's Industrial Policy Resolution of 1956 and is expected to speed up the investment process in all stages.

Under the Revised Policy, the concept of larger industrial houses has been redefined. The earlier licensing policy announced in February 1970 placed certain restrictions on undertakings belonging to the larger industrial houses i.e. those with assets exceeding Rs. 350 million. As it was felt that the definition of larger industrial houses adopted for licensing, restrictions should be in conformity with that adopted in the Monopolies and Restrictive Trade Practices (MRTP) Act, 1969, and as the definition adopted in the Act was on the basis of a lower limit of assets, it is now decided that the lower limit of Rs. 200 million as provided in the Act should be adopted for the purpose of industrial licensing policy also.

A consolidated list of industries, which are open for the participation of larger industrial houses (as defined in the MRTP Act) has also been announced. This consolidated list is to replace the earlier 'Core industries' and 'heavy investment sector' industries as defined in the licensing policy announced in 1970. This list contains ferro alloys, steel castings and forgings, special steels and non-ferrous metals and their alloys in the metallurgical industries group; boilers and steam generating plant; prime movers (other than electrical generators) viz. industrial turbines and internal combustion engines, equipment for transmission and distribution of electricity, electric motors, electrical furnaces, X-ray equipment and electronic components and equipment in the electrical equipment group; mechanised sailing vessels upto 1000 DWT, ship ancillaries and commercial vehicles in the transportation group; industrial machinery, machine tools, tractors and power tillers in the agricultural machinery; earth-moving machinery, indicating, recording and regulating devices, for pressure, temperature, rate of flow, weights and levels in the industrial instruments group; scientific instruments, nitrogenous and phosphatic fertilizers, inorganic and organic heavy chemicals, synthetic resins and plastics, synthetic rubber, man made fibres, industrial explosives, insecticides, fungicides, weedicides and the like, synthetic detergents and miscellaneous chemicals for industrial use in the chemicals group; drugs and pharmaceuticals; paper and pulp including paper products; automobile tyres and tubes; plate glass; refractories and furnace living bricks (acidic, basic and neutral) in the ceramics group and portland and asbestos cements.

The larger industrial houses will ordinarily be excluded from the industries not included in this list except where, as is permitted under existing arrangements, production is predominantly for exports. The existing arrangements, are that an export obligation of not less than 60 per cent of the new or additional production will have to be undertaken; in the case of items reserved for the small scale sector, however, the export obligation shall be 75 per cent.

Foreign concerns and subsidiaries and branches of foreign companies will also be eligible to participate in the wide range of industries specified above along with other applicants, but will ordinarily be excluded from the industries not included in this list. They will also be entitled as at present to invest in industries where production is predominantly for exports. Their investments will be subject, as hitherto, to the "Guidelines" on the dilution of foreign equity, and will be examined with special reference to technological aspects, export possibilities and the over-all effect on the balance of payments.

Government's policy will continue to be encourage competent, small and medium entrepreneurs in all industries including those listed above. Such entrepreneurs will be preferred, vis-a-vis the larger industrial houses and foreign companies, in the setting up of new capacity. Licensing policy will seek to promote production of ancillaries, wherever feasible and appropriate, in the medium or small scale sector. Cooperatives and small and medium entrepreneurs will be encouraged to participate in the production of mass consumption goods, with the public sector also taking an increasing role. Government also intend to undertake a variety of positive measures designed to promote the growth of small and medium entrepreneurs.

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The existing policy of reservation of items of manufacture for the small scale sector (involving investment in machinery and equipment upto Rs. 0.75 million, and in the case of ancillary industries upto Rs. 1 million) will be continued. The area of such reservation will be extended consistent with the potentialities and performance of the small scale sector.

The exemption limit from licensing provisions, which now applies to substantial expansion and new undertakings upto Rs. 10 million by way of fixed assets in land, buildings and machinery, will be continued. The exemption does not apply to larger industrial houses and to dominant undertakings as defined in the MRTP Act and the foreign companies including their branches and subsidiaries. It has also now been decided that existing licensed or registered undertakings having fixed assets exceeding Rs. 50 million will not only be unable to expand or diversify without a licence, as hitherto, but cannot also establish separate new undertakings without a licence.

Government hope that this change will act as a safeguard against the entry of large undertakings into areas that are primarily meant for small, medium and new entrepreneurs.

Government envisages the Joint Sector as a device which may be resorted to in specific cases having regard to the production targets of the Fifth Plan. The Joint Sector will also be a promotional instrument to assist new and medium entrepreneus. Each proposal for establishing a Joint Sector unit will be judged and decided on its merits in the light of Government's social and economic objectives. It has been clarified that the Joint Sector will not be permitted to be used for the entry of larger houses, dominant undertakings and foreign companies in industries in which they are otherwise precluded on their own. In all the different kinds of Joint Sector units, the Government will ensure for itself an effective role in guiding policies, management and operations, the actual pattern and mode being decided as appropriate in each case. □

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MORE JOINT VENTURES ABROAD

To the string of joint ventures coming up abroad with Indian assistance, five more have been added since January this year.

The ventures approved this year include two in U.S.A. : one for a hardboard unit and the other for setting up a restaurant. The third venture is for a water meter unit in Indonesia while the remaining two are in Malaysia - one for a textile mill and the other for production of metallic flexible tubes and hoses.

Of the two ventures in U.S.A., the hardboard unit is to be set up with the collaboration of M/s. Anil Hardboards Ltd., Lakshmi Insurance Building, P. M. Road, Fort, Bombay, while M/s. Ghai Lamba Catering Consultants (P) Ltd., Marshall House, 1, Hanuman Road, New Delhi, are associated with the setting up of a restaurant. The water-meter unit in Indonesia is to come up with the assistance of M/s. Mahindra and Mahindra, Gateway Building, Apollo Bunder, Bombay. Of the two units in Malaysia, M/s. Lakshmi Textile Exporters, 6/47-D, Avanashi Road, Pappanaickenpalayam, Coimbatore, are the collaborators for the textile unit while M/s. Zaverchand Gaekwad (P) Ltd., Post Box No. 95, Padra Road, Baroda, are cooperating to set up the unit for manufacture of metallic flexible tubes and hoses.

At present, 99 Indian industrial joint ventures are active abroad. Of these, 37 have gone into production while 62 are under active implementation. The total Indian investment in the projects under production and implementation has been Rs. 70.68 million and Rs. 108.44 million, respectively.

The foreign exchange earnings from the ten projects which had gone into production earlier than 1969 has been Rs. 11.43 million as on March 31, 1972, by way of dividends, technical know-how fee, managerial fee and related payments. Out of this, a sum of Rs. 9.80 million has been repatriated to India. Additionally, India has also earned Rs. 68.25 million in free foreign exchange from additional export of machinery, equipment and raw materials to these joint ventures upto 2nd March, 1972. This has been over and above the exports made against Indian equity participation.

Some of the joint ventures which have gone into production include two each in West Germany, Thailand and Ethiopia; one each in U.K., Canada, Ireland, Singapore and Iran; eight in Malaysia, five in Kenya and three each in Sri Lanka and Nigeria. Among those in various stages of implementation are one each in

West Germany, U.K., Fiji and Saudi Arabia; two each in U.S.A., Canada and Iran; four each in Mauritius, Afghanistan and Indonesia and 20 in Malaysia. The areas of manufacture and servicing undertaken by Indian firms in overseas joint ventures mainly include textile mills, paper mills, steel rolling mills, sugar mills, cement plant, oil fractionaling plant, pharmaceutical units, soap, vanaspati, glycerine, cycle and scooter joint units, automobile radiator units and hotels. The Indian contribution in joint ventures abroad has been in the form of indigenous machinery, equipment and technical know-how towards India's share of equity capital. Only such industries where there is a surplus machinery production capacity and where the internal demand for the product has been largely covered, have been allowed to participate in joint ventures.

Investment in joint ventures has been adopted as an instrument of export promotion and for promoting economic cooperation among developing countries. These ventures also serve to get over the tariff and quota restrictions on the import of consumer goods and machinery imposed by some of the developing countries. They are an important and powerful instrument for the expansion of trade on a mutually advantageous basis. Additionally, these joint ventures have opportunity for ready markets for capital goods, recurring export of raw materials, semi-processed manufactures, spare parts, components, etc; and continuous earning of foreign exchange in the form of dividends and royalties.

COTTON TEXTILES ON EXPORT FRONT

A sizeable uptrend was recorded in the export of cotton manufactures (excluding yarn, thread and clothing) in the first six months of 1972-73 (April-September 1972) over the export performance during the corresponding period of the preceding year. The export earning was of the order of Rs. 562.87 million against Rs. 422.63 million. In the full year of 1971-72, textile exports fetched Rs. 1000 million.

Among various importers of a variety of Indian textiles prominent are U.S.S.R., U.S.A., U.K., Sweden, Federal Republic of Germany, Kuwait, Iran, Iraq, Saudi Arabia, Canada, Australia, Japan, Yugoslavia, Bulgaria, Czechoslovakia, New Zealand, Sudan, Ethiopia, France, Zambia, Poland and Singapore.

Adding to the export effort of the sector engaged in the manufacture of cotton textiles, M/s. Binny Limited, No. 7, Armenian Street, Madras, secured export orders worth Rs. 18.3 million in 1972. The Madras firm is hopeful of raising their export in the current year (1973). In the wide range of textiles supplied overseas by the firm are shirting and suiting cloth, bedsheets and pillow cases, and their customers include even the sophisticated markets of Europe. The export success of the firm is mainly due to the surprising variety of designs and colours of their products.

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RADIATORS AND HEAT EXCHANGERS IN EXPORT TRADE

A wide range of automobile equipment is sought from India by several markets abroad. The export value of automobiles and parts was about Rs. 143 million for the year 1971-72. Of this, automobile parts alone contributed Rs. 63 million. Sri Lanka, Arab Republic of Egypt, Nigeria, Singapore, Sudan, Kenya, Iran, Iraq, Philippines, Poland, Saudi Arabia, Tanzania, Uganda and Yugoslavia were among the leading buyers of the auto parts.

Among the various auto parts exported, radiators and heat exchangers have come to gain prominence recently. A Coimbatore firm, M/s. Universal Radiators Ltd., which specialises in the manufacture of radiators, heat exchangers, cores and oil coolers was able to export these products worth Rs. 420,710 even to such sophisticated markets as the U.K. and Australia during 1971-72. Their exports in 1970-71 were, in fact, more at Rs. 541,689.

India's combined production capacity of radiators, cores and caps, oil air and oil water coolers was of the order of 105,000 numbers (in 1971) while actual production was estimated at 137,000 numbers at a value of Rs. 47 million. Additionally, heavy duty radiators and heat exchangers have an installed capacity of 1800 numbers while actual output at 1963 numbers was valued at nearly Rs. 20 million in 1971.

CIGARETTES TO SOVIET UNION

Consistent export growth has been witnessed for India's tobacco manufactures from year to year. During 1971-72, these products earned as much as Rs. 28.34 million as against Rs. 11.64 million in the preceding year, Rs. 6.45 million in 1969-70 and Rs. 6 million in 1968-69.

Cigarettes constituted the major area of export growth in the entire group, having brought in Rs. 15.70 million in 1971-72 (1179 tonnes), accounting for nearly 58 per cent of the total export value. U.S.S R. with an intake worth Rs. 14.96 million (1135 tonnes) was the leading buyer, absorbing nearly 95 per cent of the total exports of cigarettes. Hungary, Saudi Arabia, Mauritius, Bahrein Islands, Somalia and U.K. were among the other buyers.

Besides cigarettes, hookah tobacco fetched Rs. 6.84 million (1914 tonnes); cigars, cheroots and bidis Rs. 1.57 million (83 tonnes) and other manufactured tobacco Rs. 3.88 million (409 tonnes). Snuff, scented jarda tobacco, chewing tobacco were the other products active in exports. Saudi Arabia, Kuwait, Arab Republic of Egypt, Kenya, Bahrein Islands and Maladive Islands were prominent buying countries for hookah tobacco while Malaysia, Singapore, Dubai, Canada, Netherlands, Nepal, Qatar, Switzerland and U.S.A. were the leading destinations for cigars, cheroots and bidis.

During the first six months of 1972-73 (April-September 1972), the foreign exchange earning of tobacco manufactures totalled Rs. 16.83 million as against Rs. 16.54 million in the corresponding period of the preceding year. In this period, cigarettes fetched Rs. 11.76 million (750 tonnes); U.S.S.R. retained its position of leading buyer having absorbed worth Rs. 11.41 million (730 tonnes). Hungary, Bahrein Islands, Seychelles, Somalia and U.K. were among other buyers. The export value of other products was : hookah tobacco Rs. 3.85 million and cigars, cheroots and bidis Rs. 0.73 million.

Recently, one of the firms engaged in the manufacture of tobacco products, M/s. India Tobacco Company, Virginia House, Chowringhee, Calcutta, bagged an export order from the Soviet Union worth Rs. 2.5 million for the supply of 'Wills Filter King' cigarettes.

Besides this, the firm has already secured several orders from other countries such as Switzerland, Netherlands, Belgium and Federal Republic of Germany.

In the organised sector, there are 13 units engaged in the production of cigarettes with an installed capacity of 57,690 million pieces. Their actual production of cigarettes during the year out stripped their licensed capacity. It was of the order of 65,800 million pieces valued at Rs. 2903 million. During the preceding year, the same number of units, with the same installed capacity (57,690 million pieces), produced 62200 million pieces of cigarettes valued at Rs. 2230 million.

During 1971-72, India's total exports of unmanufactured tobacco amounted to Rs. 422.46 million as against Rs, 313.97 million in 1970-71. In the first eleven months of 1972-73 (April 72 - February 73), the exports fetched foreign exchange valued at Rs. 579.43 million. Quantum-wise 82.40 miliion kg. of unmanufactured tobacco was supplied overseas. USSR's intake was valued at Rs. 283.53 million, followed by UK at Rs. 125.63 million, Bangladesh at Rs. 60.65 million, Japan at Rs. 43 million and Czechoslovakia at Rs. 14.80 million.

The European zone was the leading area, having imported worth Rs. 26.79 million during 1972-73 (April 72 to January 73). In the preceding year (April 71 to March 72) its intake was valued at Rs. 4.75 million. Next to Europe, Asia zone too improved its intake to Rs. 18.81 million from Rs. 14.82 million while Oceania absorbed worth Rs. 1.96 million against its intake, valued at Rs. 1.89 million in the previous year. African and American zones, however, absorbed less. The exports declined to Rs. 12.64 million from Rs. 25.24 million in respect of Africa and to Rs. 14.84 million from Rs. 17.00 million in the case of America.

EXPORT PERFORMANCE AND POTENTIAL

RAYON AND SYNTHETIC TEXTILES ON EXPORT FRONT

The export earning of India's rayon and synthetic textiles has been indicating upward trend in recent years. During the first 10 months of 1972-73 (April-72 to January 73), the exports rose to a level of Rs. 75 million, registering a sizeable increase of more than 15 per cent over the export value of Rs. 65 million in the comparable period of the preceding year.

Filament rayon fabrics constituted the largest single item whose exports totalled Rs. 51.7 million, accounting for nearly 70 per cent of the entire export earning. During the corresponding period of the previous year, the export value of this item was of the order of Rs. 32.4 million. Nylon fabrics was the next major area of export growth, having fetched Rs. 9.8 million as against Rs. 5.7 million.

Spun Rayon fabrics too recorded a marginal improvement from Rs. 2.9 million to Rs. 3.1 million. The export of polyester blended fabrics, mixed fabrics and embroidered fabrics, however, registered a fall in exports during the period under review of 1972-73 against their export performance during the comparable period of 1971-72. The exports declined to Rs. 4.5 million from Rs. 6.5 million in respect of polyester and polyester blended fabrics and to Rs. 3.5 million from Rs. 6.5 million in the case of mixed fabrics.

INDIAN STEEL PIPES TO WEST ASIA

India's export trade in steel pipes and tubes amounted to Rs. 63.74 million in 1970-71. The export value of steel pipe fittings was Rs. 9.17 million. The share of West Asian markets in steel pipes and tubes was Rs. 27.10 million and in pipe fittings at Rs. 1.37 million.

Of the West Asian markets for these products, Iran, Iraq, Jordan, Kuwait and Saudi Arabia are prominent. The import value of Iran for pipes and tubes was Rs. 5.36 million while that of Iraq was Rs. 4.24 million. Jordan at Rs. 3.6 million, Kuwait at Rs. 3.7 million, Saudi Arabia at Rs. 2.1 million, Aden at Rs. 1.45 million, Trucial Oman at Rs. 1.5 million and Abu Dhabi at Rs. 1.4 million were the other buyers. In respect of steel pipe fittings, the important markets were Aden, Iran, Iraq, Jordan, Kuwait and Syria.

The overall export trade in steel pipes and tubes as well as pipe fittings would have been more but for steel shortage; in fact, in the year 1969-70, steel pipes and tubes fetched Rs. 109.5 million of which West Asia's share was Rs. 40 million. In order to overcome the problem of steel shortage, bulk imports were organised through Messrs Hindustan Steel Limited. The scheme applied to all steel based export products. H.R. strip/skelp, the major raw material for steel pipes and tubes, is one of the categories covered for imports under the scheme. In addition to facilitating adequate availability of steel, certain general steps have also been taken by the Government for promoting export trade in engineering products in general. These include a provision for import of raw material by registered exporters, supply of indigenous raw material like steel and aluminium on priority, organising bulk imports of certain raw materials by public sector agencies for export fabrication and enlarging the activities of the Projects and Equipment Corporation of India for promoting the engineering export.

The existing capacity for the steel pipes and tubes industry is estimated at 977,460 tonnes. Actual production in 1972 was of the order of 300,000 tonnes as against Rs. 234,135 tonnes in the preceding year.

BASIC CHEMICAL EXPORTS IMPROVE

The export earning of basic chemicals and soaps witnessed improvement in the first ten months of 1972-73 (April 1972-January 1973) at Rs. 317 million as compared to Rs. 289 million in the same period of the preceding year.

The improvement was obvious in respect of most of the categories falling in the group. The export value of drugs, pharmaceuticals and fine chemicals, for instance, rose to Rs. 95 million as against Rs. 88 million; that of dyes, intermediates, alcohol and coaltar chemicals to Rs. 57 million from Rs. 36 million; inorganic chemicals to Rs. 42 million from Rs. 33 million; organic chemicals to Rs. 8.2 million from Rs. 7.8 million and agro-chemicals to Rs. 1.6 million from Rs. 0.7 million. The category of glycerine, soaps, detergents, cosmetics and toiletries was also active and earned Rs. 37.5 million as compared to Rs. 30 million. The export performance of agarbattis was better at Rs. 13 million in comparison with Rs. 11.7 million earned in the earlier period. Even biological specimen, stuffed animals and skeletons contributed as much as Rs. 4.3 million compared with Rs. 1.3 million.

Among drugs, pharmaceuticals and fine chemicals, the specific products that registered export growth were nicotine sulphate, Vitamin B_1, chloromphenicol and its preparations, other antibiotics and their preparations, ephedrin hydrocloride, quinine sulphate, salt and other derivatives of Nux Vomica alkaloids, digoxin, antibacterial serums and other antiserums, bacterial vaccines, pain remedies, adhesive bandages, tapes, and plaster of paris, drug hardness medicines, potassium citrate, sodium salicylate and medicinal castor oil.

The increase in the export earning of antibiotic preparations was due to improved offtake by Kenya, Malaysia, Philippines, South Korea, Nigeria and Hong Kong. West Germany was mainly responsible for the uptrend in the export value of ephedrine hydrochloride. Considerable rise in the foreign exchange earning of quinine sulphate was facilitated due to the interest evinced by European markets including West Germany, U.K., U.S.S.R. and Bulgaria. U.S.A., Canada, Italy aud Switzerland were mainly responsible for the increased export value of bacterial vaccine. France imported large quantities of menthol. The export value of medicinal castor oil was up from Rs. 2.3 million in the first ten months of 1971-72 to Rs. 20.4 million in the same period of the subsequent year. This growth was possible due to larger imports by Australia, Kenya, Singapore, Malaysia, U.S.S.R., U.K. and Muscat.

In the group of dyes, intermediates, alcohol and coaltar chemicals, the specific products that registered export rise in the comparable periods were acid dyes and organic pigments, vat dyes, dye intermediates and coaltar dyes, benzene, benzonthrone and prepared organic dyestuff pigments.

Pigments dyes and organic pigments improved their export position from Rs. 2 million to Rs. 6.9 million. The major importers were Sri Lanka, U.S.A., U.K., Arab Republic of Egypt, Federal Republic of Germany and Japan. From a nil value in the period April 1971-January 1972, export of dye-intermediates rose to about Rs. 2 million in the same period of 1972-73 owing to sizeable imports by U.S.A., Italy, Argentina, Saudi Arabia and Federal Republic of Germany. U.K. and Kuwait were responsible for the noticeable uptrend in benzene exports from a negligible value to Rs. 3.8 million.

In the section of inorganic chemicals, the major items of export growth were hydrochloric acid, carbon black, sulphuric acid, nitrous oxide, caustic potash/potassium hydroxide, zinc hydrochloride, rare earth chlorides, bleaching powder, aluminium sulphate, sodium carbonate/soda ash, sodium bicarbonate, asphalt and catalyst chemicals.

Hydrochloric acid, for instance, earned Rs. 9 million worth of foreign exchange in the first ten months of 1972-73 as against Rs. 5 million in the same period of the previous year. Dubai, Sudan, Kenya, Saudi Arabia and Abu Dhabi were the major customers. The improvement in respect of caustic potash, / potassium hydroxide from Rs. 0.2 million to Rs. 0.6 million was due to the increased offtake by Singapore, Malaysia, Iran, Australia and U.K. Zinc hydrochloride exports were nil in the first ten months of 1971-72 but the same period of the subsequent year registered an export value of Rs. 1.2 million, mainly due to the purchases by Congo. Bleaching powder exports also rose from Rs. 0.5 million to Rs. 1.83 million and Sri Lanka, Kenya, Burma, Kuwait and Hungary were the major buyers. From hardly Rs. 3000 to Rs. 0.2 million, potassium carbonate exports proved active due to the demand in Kuwait, Indonesia, U.K. and Arab Republic of Egypt. Substantial supplies to Bangladesh enabled asphalt exports to improve from almost nothing to Rs. 2.62 million.

Among organic chemicals, the specific products that improved their offtake were butyl alcohol, hydroquinone, acetone, rubber chemicals, aromatic chemicals, oleoresins of spices and foundry chemicals. In the group of agro-chemicals, export performance of B.H.C. dust and phosphides and insecticides was notable.

In the category of glycerine, soaps, detergents, cosmetics and toiletries, principal export products were hair oil, face powder, perfumes and attars and synthetic detergents. Face powder exports, for instance, rose from Rs. 1.3 million to over Rs. 7 million, mainly due to higher imports by U.S.S.R., Kuwait, Fiji and Mauritius. The export earning of synthetic detergents improved from Rs. 5 million to Rs. 7.45 million and the major markets were Saudi Arabia, U.S.S.R., Dubai, Qatar and Afghanistan.

Although the export earning of essential oils revealed a marginal fall to the level of Rs. 30 million as compared to Rs. 33.9 million, certain categories like blended rosa oil, eucalyptus oil and vetiver oil improved their performance. But the major product in this category was sandalwood oil which fetched Rs. 21 million in the first ten months of 1972-73 as against Rs. 22 million in the same period of the preceding year.

EXPORT SHARE OF SMALL SCALE INDUSTRIES

Small industrial units in India have come to substantially contribute to export trade. While the actual export value of these units is not available, the units that have exported 10 per cent or more of their production – a pre-condition for priority treatment in respect of import of raw materials and components—are stated to have earned Rs. 244.4 million in 1970-71 against Rs. 222.5 million in 1969-70.

In the wide range of exports effected by the sector are ready made garments, woollen knitwear and hosiery, processed foods, paper cones and tubes, E.I. tanned and chrome leather, agarbattis and perfumes, drugs and medicines, brass utensils and builders' hardware, galvanized tension bars and cast iron pipes, bicycles and parts, and hardness testing machines, electrical goods and accessories, plastic goods and auto parts and components.

In 1970-71, small scale sector of the processed food industry is estimated to have exported 83 per cent of its total production. Its production value was Rs. 22.43 million and exports Rs. 18.78 million. The woollen knitwear and hosiery sector was also active in export trade having supplied abroad 82 per cent of its production. Its production value was Rs. 31.72 million while the export earning was of the order of Rs. 26 million. The contribution of the small scale segment in the readymade garment industry was even more impressive; it produced worth Rs. 58.8 million and exported worth Rs. 55.4 million (94 per cent). Exports of the small units in utensils, brass artware and builders' hardware, were also prominent. These units produced worth Rs. 32.6 million and exported 55 per cent of the same at Rs. 18 million. The small scale units of the bicycle industry exported worth Rs. 17 million which was about 47 per cent of its production at Rs. 36.4 million in 1970-71. Galvanised tension bars and cast iron pipes produced Rs. 26.65 million worth in 1970-71 and exported 38 per cent at a value of Rs. 10 million. Electrical cables and wires is yet another line where the small industries have been active on export front. Their manufacture value was of the order of Rs. 32.23 million and export value Rs. 8.3 million.

Among those other small scale industries whose export share in production value was more than 50 per cent in 1970-71 were leather goods, glue and gelatine, bifocal blanks and lenses (87 per cent), stone slabs, steel tubes and pipe fittings, cutlery and locks, brass handles for safes, diesel engines and parts (80 per cent) oil mill machinery and parts (70 per cent) and wooden and iron sieves, hosiery and knitting machine needles and metal gauges. Interestingly, the units engaged in the manufacture of rosa oil and fishing flies exported their entire production in 1970-71.

The Government of India have been devising ways and means to further explore the export potential of the small scale sector and ensure quality supply of its products. A Working Group for export production planning for small industries' products has been appointed and the group selected 47 products that should receive priority. These products include diesel engines —up to 10 HP, both vertical and horizontal, pump sets, sugar cane crushers, espresso coffee machines, low price general purpose machine tools, duplicators—hand and power operated, textile machinery parts and accessories, agricultural implements including tools, hosiery and knitting machines, steel conduite, sanitary iron castings including manhole covers and pipes, hand tools, ferrous hollow-ware and hardware, fire extinguishers, stainless steel cutlery, bicycle and bicycle parts, scientific instruments, surgical instruments and equipment, clocks and timepieces and parts, stranded wire for telegraph posts, electrical transmision hardware, electric motors, switchgears, L. T. insulators, domestic electrical appliances, M. T. furnaces, electrical light fittings and wiring accessories, electrical measuring instruments, radio receivers, public address equipment and components, storage batteries and components, plastic moulding and extrusions, vegetable and fruit preserves—canned or otherwise, paper conversions, such as ice-cream cups, drinking cups, tumblers etc., rubber mouldings, agarbattis and 'dhoop', bifocal blanks and lenses, microscope slides, etc., toys of all description, fasteners, pencils and ball point pens including wooden slates, lead slips etc., spectacle frames, costume jewellery, including glass beads, hosiery and knitwear, gas mantles, readymade garments, umbrella, umbrella tubes, handles, sticks and frames, stationery, greeting cards, invitation cards and leather and leather products. Even this selected list should give an idea of the very broad range of products available for export from India's small scale Industry.

CARD DATA RECORDER TO AUSTRALIA

The first IBM 129 Card recorder was exported from India to Australia in October last. M/s. IBM commenced its operations in India in 1951 and initially all its activities were based on imports. The indigenous content in the manufacturing process increased year after year since then. Machines prepared by the IBM group in India at Bombay have been exported to more than 40 countries and have achieved foreign exchange worth over Rs 80 million.

Over the past few years, their exports were concentrated on the IBM 029 Key Punch, the indigenous content of which was raised from 20 per cent at the commencement of its manufacture to slightly over 70 per cent in 1971. The IBM 129 Card Data Recorder has largely replaced now the 029 Key Punch. The firm anticipates that they would add to India's foreign exchange earnings to the extent of Rs. 60 million per year once the export production of the revised IBM 129 goes on full stream.

The electronics industry in India has made a notable impact on almost all the sectors of the economy embracing industry, commerce, medicine, agriculture, research, aeronautics, defence, science and management. The industry claims 59 medium and large scale units and about 1600 small scale units with an approximate production value of Rs. 1140 million and export performance of Rs. 60 million per year. About 40 per cent of the industry and production in the electronics field is said to be concentrated in Maharashtra.

Over 70 per cent of the 173 computer systems installed in India are of IBM make. The IBM group brought down the import content of its products from 86 per cent to 35 per cent by fostering the growth of indigenous ancillary units.

UNFINISHED LEATHER EXPORTS RESTRICTED

Government of India have decided to impose a quota system for export of semi-processed hides and skins with effect from April 1973. The objective is to reduce the exports over the next five years to a level equal to 25 per cent of the level reached in 1971-72.

The decision has been taken to help the footwear and leather goods industry, particularly in the small scale sector, which is facing scarcity and increase in prices of the raw material on account of unprecedented rise in the price of leather in the international market and the consequent increase in exports of semi-processed hides and skins. Exports of semi-processed hides and skins and finished leather during the year 1971-72 were of the order of Rs. 900 million but during the current year, they have registered a steep rise and are expected to touch a figure of about Rs. 1500 million.

In this context, the export of semi-processed hides and skins has also been canalised through the State Trading Corporation with effect from December 14, 1972. This will provide an institutional framework for making the desired changes in the pattern of export trade in leather.

In addition to these long-term measures, Government of India are also considering a scheme for giving financial assistance to exporters of footwear as an immediate step to mitigate the hardship of the industry.

The Government are considering a proposal to set up a Leather Export Development Corporation to strengthen and diversify the export sector and improve the export performance of leather industry. This Corporation will concern itself with promotion of interests of footwear and leather goods manufacturers.

TRADE RELATIONS WITH SPAIN

India has been having a favourable balance of trade with Spain although the two-way trade volume is not too significant. In 1971-72 Indian exports to that country amounted to Rs. 31 million while her imports were of the order of Rs. 13 million. In 1970-71 the export value was over Rs. 26.8 million and the import trade amounted to Rs. 14 million. In the first half of 1972-73, the value of Indian exports to Spain totalled Rs. 16.87 million.

The major items of exports from India were crude opium, precious and semi-precious stones, guargum, coir yarn and iron ore. A few non-traditional products have also started figuring in India's export trade to that country. Such supplies included, developed cinematographic films, measuring rods and tapes, pearls and precious stones, clothing and leather.

The major items of Indian imports from Spain have been zinc, inorganic and organic chemicals and cork.

Though exports from India have been on the rise and the country has a favourable balance of trade with Spain, full potentialities of bi-lateral trade have not yet been explored. Indian products like iron ore, hides and skins, animal casings, railway equipment, tea, frozen sea foods and jute have good potential in the Spanish market. Engineering products like machine tools, diamond drill bits, bright bars, tungsten carbide and automobile parts are also stated to be in good demand in Spain and India is in a competitive position to supply the same.

A Trade and Economic Cooperation Agreement between the two countries was signed in mid-December 1972. The Agreement is to provide for mutual trade in freely convertible currency as also for enabling enlargement of the trade volume mutually. It does not stipulate trade between the two countries to take place in any clearing system and as such its volume would depend on trade contracts being concluded on normal commercial considerations.

INDO-SUDANESE TRADE TALKS

A four member trade delegation from Sudan had discussions with India's Commerce Minister, Prof. D.P. Chattopadhyaya on the possibility of expanding trade and economic cooperation between the two countries. The delegation evinced interest in India's setting up joint ventures in Sudan and specifically mentioned the desirability of setting up a tannery in Sudan. The possibility of India's offering technical assistance to that country for developing textile industry was also discussed. India's Commerce Minister referred to the country's close relations with African countries in general and her desire for mutual cooperation in the field of trade and industrial development.

Pursuant to the discussions between the visting delegation and Indian officials, it was decided to introduce a scheme of technical credit for smooth flow of trade between the two countries. The scheme is to come into force with effect from August, 1973 under which specified technical credit would be available to both the countries. The credit is expected to facilitate the existing lines of trade exchanges.

A trade plan for 1973 between India and Sudan was signed in January this year. The trade plan envisages two-way trade of nearly Rs. 1000 million between the two countries.

India exports tea, textiles, jute manufactures, engineering products, spices, perfumes, essential oils and a vast range of consumer goods to Sudan and imports raw cotton, gum arabic and raw hides and skins from Sudan.

Sudan is India's largest trading partner among developing countries with Rs. 500 million worth of annual exports in the direction of that country.

BOOST IN TOBACCO EXPORT

India's tobacco and tobacco products exports during the first 11 months of 1972-73 (April 72-February 73) estimated at Rs. 601.48 million have revealed an impressive export growth, outstripping the export earning of Rs. 450.80 million of the entire year of 1971-72 and registering a sharp increase of over 33 per cent. The share of unmanufactured tobacco was Rs. 579.43 million in the period under review in 1972-73.

As in the preceding year (1971-72), U.S.S.R. retained its position of the largest single buyer, having imported worth Rs. 283.58 million (32611 tonnes). U.K. was the second major destination whose intake totalled Rs. 125.63 million (14,513 tonnes), followed by Bangladesh at Rs. 60.65 million (13913 tonnes), Japan at Rs. 43 million (4231 tonnes), Czechoslovakia at Rs. 14.80 million (1596 tonnes), Irish Republic at Rs. 12 million (1158 tonnes), Bulgaria at Rs. 6.36 million (1723 tonnes), Nepal at Rs. 4.68 million (1721 tonnes), Somalia at Rs. 4.29 million (1499 tonnes), Belgium at Rs. 3.21 million (595 tonnes), Libya at Rs. 2.75 million (261 tonnes) and Netherlands at Rs. 2.60 million (794 tonnes).

Singapore, Saudi Arabia, South Yemen People's Republic, Indonesia, France and Sierra Leone were among other buyers.

Tobacco products, the next important category brought in Rs. 22.00 million. Cigarettes constituted the major item, having earned Rs. 18.80 million, accounting for more than 80 per cent of the entire export value of tobacco products. The export earning of other products was : hookah tobacco Rs. 1.8 million; bidis Rs. 0.40 million; snuff Rs. 0.17 million and others Rs. 0.79 million.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

INDIGENOUS PRODUCTION OF INDUSTRIAL GASES

India has made rapid strides in the production of a wide range of industrial gases required for the manufacture of a large number of engineering products. The production range covers, oxygen, acetylene, calcium carbide, nitrogen, nitrous oxide, argon. hydrogen and carbon dioxide.

Production of oxygen was of the order of 54.23 million cubic metres in 1971 as against 44.85 million cubic metres in 1970. Output of acetylene improved to 6,13 million cubic metres from 6.12 million cubic metres. Other industrial gases too recorded advance; nitrous oxide improved to 0.24 million litres from 0.23 million litres; argon to 242,000 cubic metres from 227,000 cubic metres; hydrogen to 956,600 cubic metres from 865,000 cubic metres; carbon di-oxide to 11433.3 tonnes from 10864.4 tonnes and nitrogen to 11.52 million cubic metres from 9.34 million cubic metres.

Licensed capacity at the end of 1971 in respect of oxygen was 8.40 million cubic metres; 14.76 million cubic metres for acetylene; 0.82 million cubic metres for argon; 17.80 million cubic metres for nitrogen; 2989 million litres for nitrogenous oxide and 41,953 tonnes for carbon dioxide.

The production of oxygen and acetylene gases has been recently commissioned by some new units at Bangalore, Hyderabad and Coimbatore. To gear up the production of the Coimbatore unit, arrangements are being made to import cylinders.

The industry has recently started export of argon and nitrous oxide gases. During 1971-72, argon gas from India was mainly imported by Malaysia, Hong Kong, Kenya, Nepal and Singapore valued at Rs. 0.32 million. Nitrous oxide earned Rs. 0.21 million and Burma and Qatar were the only destinations. Oxygen gas netted Rs. 59,499 with Burma and Kenya as the prominent buyers. Besides, nitrogen was also active in exports during the year.

PROGRESS IN MAN-MADE FIBRES PRODUCTION

Production of man-made artificial fibres in India has witnessed constant growth in the last two decades. The present production is estimated to be of the order of 120,000 to 125,000 tonnes per annum. The bulk of the production is in cellulosics. Beginning with only 2 units, it rose to this level from only 2.27 million kg. of viscose filament yarn in 1950. Today, the industry has emerged as important source for providing raw materials to 100,000 powerlooms and 300,000 handlooms.

The product range in the man-made fibre sector includes viscose filament yarn, nylon filament yarn, polyester fibre, cellulose film, acetate yarn, viscose tyre yarn/cord and viscose staple fibre.

Estimated production and installed capacity of the various units in the organised sector were as follows for the year 1971 : viscose filament yarn - 37,022 tonnes (Rs. 5.31 million) and 37,700 tonnes (8 units); viscose staple fibre - 60,709 tonnes (Rs. 283.9 million) and 72,000 tonnes (2 units); acetate fibre yarn - 1,922 tonnes (Rs. 29 million) and 2,000 tonnes (1 unit); nylon filament yarn - 10,347 tonnes (Rs. 435 million) and 8,996 tonnes (5 units); viscose tyre yarn/cord–16,927 tonnes (Rs. 266.4 million) and 19,000 tonnes (3 units); polyester fibre - 5,730 tonnes (Rs. 118.9 million) and 5,000 tonnes (1 unit); cellulose film - 6,279 tonnes (Rs. 85.9 million) and 7,000 tonnes (2 unit); polyester filament yarn - 501 tonnes (Rs. 43 million) and 702 tonnes (2 units) and nylon tyre cord - 610 tonnes (Rs. 21.9 million) and 2,400 tonnes (2 units). The total value of man-made production during 1971 was estimated at Rs. 1815 million.

For the first time in India, two firms, namely, M/s. Nirlon Synthetic Fibres and Chemicals Limited, Bombay, and M/s. J.K. Synthetics Limited, Kota, Rajasthan, undertook production of nylon yarn/cord on commercial scale in 1971. Their installed capacities per annum, have been placed at 1,400 and 1,000 tonnes respectively. Besides, the latter firm is also engaged in the manufacture of nylon staple fibre and its installed/licensed capacity has been placed at 1,800 tonnes per annum.

Raw materials, such as rayon grade wood pulp for viscose staple fibre are indigenously available. However, pulp viscose products, caprolactum for nylon and DMT for polyester fibre are being procured through imports. After the commissioning of a plant of M/s. Indian Petro-Chemical Corporation Ltd., in the Gujarat State, 24,000 tonnes of DMT is to be available indigenously. P-xylene, another raw material, is required to be imported in the initial stages till the p-xylene plant commences its production.

M/s. Gujarat State Fertilizer Company, in the Gujarat State, has been issued a licence to set up a plant to produce 20,000 tonnes of caprolactum per annum. The production by the unit is expected to be available within a period of 2 years.

The total requirements of rayon and synthetic fibres by the end of Fifth Five-Year Plan (1978-79) has been estimated at 175,000 tonnes and 105,000 tonnes, respectively, totalling 280,000 tonnes. These estimates are based on the projected population growth and anticipated industrial needs.

INDO-NORWEGIAN AGREEMENT ON FISHERIES

Under an agreement signed recently, the Government of Norway is to provide one fishing vessel as gift to the Government of India. The well-equipped 90 ft. long stern trawler/Purse Seiner costs about Rs. 3.8 million and will be used for exploratory fishing. By another agreement, various items of fisheries equipment such as electronic devices, plate freezers, trawler and purse-seine webbing valued at Rs. 2.4 million was also gifted.

The Integrated Fisheries Project at Cochin, developed with the assistance of Norwegian Agency for International Development has four sea going vessels which were also earlier gifted by Norway. One vessel is equipped for oceanographic research and the other three are for deep-sea fishing and exploration of marine resources. The project has several other smaller vessels, repair facilities, unit for processing and export of shrimp, refrigeration of fish and refrigerated storage and facilities for training of personnel in operation and maintenance of electronic fish detection equipment.

INDIA PAVILION AT LEIPZIG FAIR

India has again participated in the Leipzig International Fair recently. The India Pavilion at the Fair was visited by the Head of the State of the German Democratic Republic and other high ranking dignitaries on the opening day of the Fair.

This is the first time that the India Pavilion had the honour of being visited by the G.D.R., State Head. Seeing the exhibits on display, the GDR authorities and the visiting dignitaries appreciated the wide diversity achieved by the Indian economy in producing a large number of sophisticated goods. The indigenously produced electronic calculator and TV set evoked special interest. It is hoped that as a result of keener awareness of India's export capability in such sophisticated non-traditional goods and consumer goods, exports from India to G.D.R. and other participating countries will improve considerably in future years.

Among traditional items, Indian textiles and tea particularly, received attention. During 1971-72, India's exports to G.D.R. amounted to Rs. 179.49 million. The exports were of the order of about Rs. 66.52 million during the first half of 1972-73.

Exports to GDR now include some non-traditional items like cotton readymade garments, linoleum, leather goods, sports goods, electrical motors, switchgears, machine tools, wire ropes, castings and forgings, besides traditional export commodities like deoiled cakes, cashew kernels, tea, coffee, cotton textiles and jute manufactures.

EXPORT SPECIAL

'Export Special' – a goods train introduced by the Railway Ministry for the benefit of exporters of Punjab, particularly at Amritsar, Jullundur and Ludhiana, successfully completed the first year of its operation. This is the first of its kind in the country exclusively made operational for export purpose.

From Amritsar, the train leaves for Bombay once a week - on Thursday with export goods valued at millions of rupees for onward shipment from Bombay port to various destinations abroad. The train carries wagons ranging from 50 to 70 numbers and reaches Bombay in 5 days.

The 'Export Special' guarantees the exporters of the Punjab region of timely despatch of their goods to Bombay within a stipulated period. This enables the exporters to schedule their shipments in such a way that the ships are available for loading of cargo.

Considering the overwhelming response by the exporters, the Railway Administration has made the 'Export Special' a permanent feature.

The area covered by the special has also been widened and now it covers other stations such as Dhariwal, Moga, Hamira, Goraya, Rajpura and Jammu. Wagons booked from these stations are attached to this Bombay bound Special train at these stations.

The goods for export, to be transported by the train include tea, coffee, walnut, pickles, woollen and silk cloth, hosiery, bicycles and cables and are destined to reach U.S.A., U.K., U.S.S.R., Arab Republic of Egypt, Afghanistan, German Democratic Republic, Iraq, Iran, Kenya, Yemen People's Republic, Greece, Aden, German Federal Republic and many other markets in Africa and Asia.

The introduction of a similar Export Special' from Amritsar to Howrah is under consideration.

SYNTHETIC RUBBER PLANT AT KOYALI

A polybutadiene synthetic rubber plant is being set up by Indian Petrochemicals Corporation Ltd. (IPCL), a public sector unit, as one of the downstream units of the petrochemical complex at Koyali near Baroda, adjacent to the Gujarat Refinery. Feedstock butadiene for the rubber plant will be one of the streams available from the Naphtha Cracker under construction by IPCL.

The plant is being set up with the assistance of Canada which is advancing a loan of Rs. 52.5 million to meet the foreign exchange cost of the plant. The loan is repayable over 50 years with a grace period of ten years and carries no interest, service or commission charges.

TEA PRODUCTION UP

India's total tea production in 1971-72 registered a substantial rise as compared to the production achieved in 1970-71. Registering an impressive rise of about 20 million kg., tea production in 1972 crossed 450 million kg. mark, outstripping the record production in the preceding year at 433 million kg.

South India contributed 101.5 million kg., accounting for over 22 per cent of the total tea production of the country during the year.

India's exports of tea and mate during 1971-72 amounted to Rs. 1563.15 million as against Rs. 1482.50 million in the preceding year. Tea annually contributes 10 per cent of the country's total foreign exchange earning. The Tea Board of India is actively engaged in promotional efforts both in terms of generic promotion and uni-national promotion. The generic promotional measures are directed towards increasing consumption of tea in general in the world markets while the uni-national promotional efforts are for improving and increasing consumption of Indian Tea. To achieve these objects, the Tea Board has set up five foreign offices abroad, located at London, Brussels, Sydney, New York and Cairo.

SPEED CONTROL DEVICE

An indigenous electronic device for controlling locomotive speed and power has reportedly been evolved in India, as a substitute to a similar one being imported from the U.S.A.

This device was evolved jointly by Diesel Locomotive Works, Varanasi, Heavy Electricals (India) Ltd; Bhopal, Central Electronic Enginneering Research Institute, Pilani and the Electronic Corporation of India, Hyderabad on the lines of a similar one which was being imported from the United States.

SELF-SUFFICIENCY IN ASBESTOS CEMENT PRODUCTION

Asbestos cement products manufacturing sector of the cement industry is well established and made the country self-sufficient in the products made from asbestos cement. The country is now in a position to export annually about 50,000 to 100,000 tonnes. During 1971-72, building material of asbestos earned Rs. 2.48 million. Asbestos cement pipes, asbestos cement sheets, asbestos cement tiles and other articles of asbestos cement were prominent products active in export.

The industry's product range includes roofing sheets, building pipes, pressure pipes for conveyance of tap and irrigation water, corrosive liquids and fluids, sewage pipes, household water tanks, septic tanks and grains bins in villages. The significant feature of these products is that, these can replace steel and galvanised sheets. Considering the growing shortage of steel and galvanised sheet in the country, these products can spare these metals for other manufactures.

The complete technical know-how for the manufacture of asbestos products has been developed indigenously by the industry which is to-day, in a position to manufacture complete plant and equipment for AC sheets, pipes, pressure pipes etc. The industry has generated a capacity to export finished products and complete plants and machinery to produce these products. Even the technology to run these units can be exported. The manufacture of these items is undertaken on most scientific methods of process control and strict adherence to specifications. In 1971, the annual installed production capacity of 561,000 tonnes was spread over among the 9 units engaged in the production. The licensed capacity during the year was of the order of 636,000 tonnes.

In 1971, AC sheets and ACC production by the 9 units in the line was of the order of 325,097 tonnes as against the installed capacity of 561,000 tonnes. In the same year, the production of AC building pipes was 8683 tonnes while the production of ACP pipes was of the order of 52,680 tonnes.

Besides these, asbestos textiles and other products are currently being produced in the country. In 1971, the overall production of asbestos textiles, jointings, packings and mill boards was estimated at around 4400 tonnes. The production of high pressure jointings has been recently started in the country by a firm in Bombay.

During the year, the country's total cement production in the organised sector was at 14.93 million tonnes as against 14.03 million tonnes in the preceding year (1970). In the respective years, the figures of installed capacities were 19.39 million tonnes and 17.36 million tonnes and 50 units were engaged in the production in the organised sector in each year.

DECLINE IN FOREIGN AID NOT TO AFFECT PLAN PROJECTS

Compared to the previous year's record, there was a decline in the amount of foreign aid received by India in 1972-73. But this decline is not expected to affect the implementation of plan projects included in the country's Fourth Five-Year Plan. The foreign exchange gap would have to be met by vigorous measures of import substitution and export promotion and judicious use of country's foreign exchange earnings, stated India's Finance Minister, Mr. Y. B. Chavan.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

CHEMICAL POLISHING OF COPPER ALLOYS

An improved process for chemical polishing of copper alloys has been developed at the Central Electrochemical Research Institute (CECRI), Karaikudi (Tamil Nadu).

The process developed by CECRI broadly consists in treating copper and its alloys chemically in a solution containing alkali metal dichromate, sulphuric acid in suitable concentration with an organic inhibitor for 50-60 seconds of temperature ranging from 30-80°C.

Chemical polishing of copper and its alloys is presently done by employing acid bath containing nitric acid, phosphoric acid and/or acetic acid with or without arsenic acid. Besides being costly, this process suffers from other drawbacks. It gives rise to abnoxious fumes, is sensitive to moisture and is shortlived. The loss of metal during polishing is also very high.

The new process is not sensitive to water. It does not require any drying before polishing and hence, it is useful for continuous operation. This treatment does not require any post treatment to train the lusture before lacquering. No abnoxious fume is evolved during the treatment. Operating conditions such as temperature, concentration, treatment time are not critical. The electrolyte is easily regenerable.

The process is suitable for small articles of complicated shapes or with an intricate embossed design which are not accessible to mechanical polishing.

Raw materials required in the process are potassium dichromate, sulphuric acid and benzotriazole. All these are available indigenously. The essential items of plant and machinery are, vapour degreasing tank, electrically heating drying chamber, polythene tanks, electrolyte tanks, lead-lined M.S. tanks and Silica immersion heaters.

CARBON CLEANER INJECTION

The Defence Research Laboratory (Materials), Kanpur, has developed an indigenous material called "Carbon Cleaner - Injection" as a substitute for imported products like Aerojek, P3FD solution and FO-128-MAN used for cleaning of tubular elements of oil coolers of aero-engines and auto vehicles during overhauling.

The developed material consists of a lower phase based on chlorinated solvents and phenelic bodies and as upper phase of water containing a suitable corrosion inhibitor.

The composition is very much suitable as a cleaner and the deposits adhering to the tubular elements can be completely removed by rinsing with the composition once or twice. It is non-corrosive to copper, steel, brass and plated steel.

The oil coolers of aero-engines consist of a number of copper tubes of fine diameter and oil coolers of Shaktiman trucks consist of a block having inter-connected tubes with fins. Sludgy/carbonaceous deposits formed inside these tubes result in reduction in cooling of oil affecting the engine performance. The construction of the components is intricate and does not allow scrapping or manual cleaning. By the use of the newly developed material, fine cooling tubes can now be cleaned effectively.

The newly developed cleaner has been tried on oil coolers of various aero-engines and auto vehicles and is found to be very useful and effective. Its performance is even superior to that of the imported products. It is also found equally effective for cleaning of oil coolers of Shaktiman lorries.

All the raw materials required are available indigenously. Essential item of the plant required is a reaction vessel of 1 tonne capacity with electrical stirring arrangement.

IMPROVED PROCESS FOR WETTABLE CRUST LEATHERS

A process has been developed recently by the Central Leather Research Institute (CLRI), Madras, for the manufacture of Wettable Crust Leathers using Zirconium salts, either alone or in conjunction with chrome salts.

The process developed by CLRI, consists of a pretreatment of pelt with naphthalene sulphonic acid formaldehyde, followed by zirconium tannage or by a chrome-zirconium combination tannage. The leathers thus produced are comparable in all respects with conventional semi chrome leathers which are used for garments and suede leather. These also have the additional advantage of light colour and amenability to fast and deep dyeings and improved fastness to light. Pilot plant tests have confirmed the technical and economic feasibility of the process developed.

Normally semi - chrome leathers are produced from the well known E.I. tanned leathers and finished to various types of leather by the countries who import the E.I. leathers. The present process developed thus affords a possibility of exporting the Cr-Zr or Zr. leathers in the place of E.I. leathers in a dry condition. These are easily wettable without resorting to any wetting agent and could be easily processed to different types of finished leathers like garments and suedes. The cost of manufacture of leathers produced by the above mentioned process has been found to be less than that of leathers produced by the conventional semi-chrome process starting from E.I. leathers.

The raw materials such as naphthalene sulphonic acid, formaldehyde, chrome extract and zirconium sulphate required in the process are all indigenously available.

DEVICE FOR WATER SOFTENING DESIGNED AND FABRICATED

A continuous countercurrent ion-exchange unit for softening of water has recently been developed by Central Salt and Marine Chemicals Research Institute (CSMCRI), Bhavanagar. It consists of three columns —one each for exhaustion, regeneration and rinsing operations.

For treating a known volume of water of definite composition, this improved arrangement of the continuous countercurrent ion-exchange apparatus has certain advantages over the conventional fixed bed system. For example, the quantity of the resin required is reduced to a third; the quantity of regenerant required is also reduced and the ideal period for regeneration and rinsing etc. is completely eliminated as exhaustion and rinsing are simultaneously carried out in three different colums continuously. The cost on equipment is cut down as the size of the column is reduced due to lower resin requirement. The possibility of resin carry over along with the treated water is eliminated in the design by providing a false partition of a 60 mesh S.S. sieve at the top of the exhaustion column below the outlet connection and the rate of flow of the treated water is adjusted in such a way that the resin falling from the top is not prevented from settling by the up-thrust of the water flow.

RECENT TRENDS IN EXPORT TRADE

India's export earnings at Rs. 9164 million during the first half of 1972-73 (April-September, 1972) registered an increase of Rs. 1623 million over the export value of Rs. 7541 million during the corresponding period of 1971-72. The increase would, in fact, be more, if exports to Bangladesh are also taken into account completely.

The improvement of the export trade was made possible due to the increased offtake of a wide variety of products. In the food and live animals group, *marine products* registered a substantial uptrend to the level of Rs. 282 million from Rs. 153.52 million. The export earning of meat and meat preparations was also up at Rs. 8 million as compared to Rs. 6 million. Export of wheat which was negligible in the same period of 1971-72 rose to nearly as much as Rs. 200 million. Similarly overseas supply of pulses and flours improved to about Rs. 20 million from Rs. 15 million. *Fruits and vegetables* including nuts, fresh fruits and dried fruits also fetched more foreign exchange at Rs. 447 million as against Rs. 386 million. Overseas supply of *tea and coffee* was at Rs. 759 million and Rs. 160 million respectively as compared to Rs. 691 million and Rs. 147 million in the comparable period of 1971-72.

Tobacco exports showed considerable improvement. The export of unmanufactured tobacco which was Rs. 310.41 million in April-September 1971 secured nearly as much as Rs. 438.73 million in the same period of 1972. The exports of manufactured tobacco were of the level of Rs. 16.50 million in both the periods.

Among *textile fibres and waste*, cotton was fairly active in export markets, having brought in Rs. 128.60 million against Rs. 86 million. Wool and other animal hair fetched Rs. 26.30 million against Rs. 19.58 million. Jute fibre also improved to Rs. 27 million from the earlier level of Rs. 6.28 million.

Metalliferous ores and metal scrap, however, registered a decline to Rs. 478 million from Rs. 526 million mainly due to the decreased offtake of *iron ore* and concentrates (Rs. 416.52 million against Rs. 432.47 million) and ores and concentrates of non-ferrous metals (Rs. 55.58 million against Rs. 80.60 million).

The export value of *petroleum and petroleum products* rose sharply to about Rs. 67 million from Rs. 38 million. The group of *chemicals* also revealed an export uptrend to about Rs. 188 million from Rs. 161 million. Chemical elements and compounds including organic chemicals, inorganic chemicals, oxides and halogen salts were supplied abroad to the tune of Rs. 42.73 million compared to Rs. 38.82 million. Dyeing, tanning and colouring materials netted Rs. 44 million against Rs. 21.78 million. The offtake of medicinal and pharmaceutical products, however, fell to Rs. 39.86 million from Rs. 48.23 million. The group of essential oils and perfume materials again fetched more at Rs. 50.63 million in comparison with Rs. 42.69 million.

Among the manufactured products, several categories showed trends of export dynamism. *Leather and leather manufactures* which earned foreign exchange worth Rs. 419.72 million in the first six months of 1971-72 improved their performance to Rs. 720.75 million in the same period of the following year. Rubber and rubber manufactures, paper and paper board and manufactures, glass and glassware were among the products that saw a sizeable export improvement.

A notable improvement took place in respect of *textile yarn and fabrics* also. This section fetched Rs. 2271.65 million against Rs. 1866.34 million. Jute manufactures (excluding twist and yarn) were exported to the tune of Rs. 1333.76 million as compared to Rs. 1163.24 million; cotton manufactures (excluding yarn, thread and clothing) Rs. 562.87 million against Rs. 422.63 million; floor coverings and tapestries Rs. 121.89 million against Rs. 94.84 million; textile yarn and thread Rs. 178.33 million from Rs. 10.8 million. The foreign exchange value of pearls, precious

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and semi-precious stones rose considerably to the level of Rs. 351 million from Rs. 247.12 million.

While the entire group of *iron and steel* earned less at about Rs. 232.50 million as compared to Rs. 253 million, specific categories like pig iron and tubes, pipes and fittings gave a better account. Export of pig iron and sponge iron fetched Rs. 97.81 million against Rs. 70 million. Steel tubes and pipes earned Rs. 62.13 million as compared to Rs. 49.72 million. Universals, plates and sheets of iron/steel also earned more at Rs. 4.40 million as against Rs. 1 million. The decline in the overall export earning of iron and steel group was mainly due to the poor offtake in respect of rails and railway track materials, iron and steel castings and forgings and iron and steel bars, rods and angles.

As in the case of iron and steel, non-electrical machinery also witnessed a marginal fall in exports from Rs. 140 million to Rs. 133.83 million. But the offtake of power generating machinery improved sizeably to about Rs. 37.50 million from Rs. 29.21 million. But the overseas supply of textiles and leather machinery, office machines and agricultural machinery experienced a setback.

A consistent line of export growth in recent years, *electrical machinery, apparatus and appliances* continued to reveal an uptrend in the period under review (Rs. 125 million as compared to Rs. 104.46 million). Almost all categories in this group have registered improvement. Electrical power machinery and switchgear for instance, recorded and export value of Rs. 27.84 million as against Rs. 23.84 million; equipment for distributing electricity fetched Rs. 37.84 million against Rs. 32.64 million; domestic electrical equipment Rs. 18.12 million against Rs. 10.14 million and other electrical machinery and apparatus Rs. 25.85 million against Rs. 19.98 million. The offtake of telecommunication apparatus, however, suffered at Rs. 15.33 million as compared to Rs. 17.67 million.

Road vehicles other than motor vehicles (mainly bicycles) constituted another group of consistent export expansion. Their exports totalled Rs. 49.54 million against Rs. 37.63 million in the comparable periods. The offtake of road motor vehicles was Rs. 57.68 million against Rs. 55.85 million. Among other *transport equipment* exported by India, aircraft has come to be included in a prominent way. Railway vehicles fetched only Rs. 10.95 million as against Rs. 39 million in the comparable periods.

Directionwise, the *African region* absorbed India's exports worth Rs. 525.96 million in the first six months of 1972-73 as against Rs. 567.30 million in the same period of 1971-72. The offtake of U.S.A. increased to Rs. 1452.33 million from Rs. 1301.37 million. In the *North American region* exports to Canada were, however, less at Rs. 168.42 million as compared to Rs. 207.19 million. The *Latin American continent* also absorbed worth Rs. 26.22 million only against Rs. 65.29 milllion. In the *Asian region*, ECAFE countries group imported more at Rs. 2195.89 million in comparison to Rs. 1898.57 million. Japan particularly improved her purchases to the tune of Rs. 937.20 million from Rs. 811.60 million. The export value of supplies to Bangladesh was of the order of Rs. 360.88 million in the first six months of 1972-73 as against none in the same period of the preceding year.

The *East European region* which marks a major area of India's export growth imported Indian goods worth Rs. 2266 million as against only Rs. 1698.33 million in the comparable period of 1971-72. The offtake of U.S.S.R. particularly improved from Rs. 1067 million to about Rs. 1490 million. Bulgaria, Czechoslovakia and Poland were other markets where Indian exports registered sizeable rises.

In *West Europe*, the ECM countries absorbed as much as Rs. 946.36 million against Rs. 545 million. The major markets that were responsible for the increases were the Federal Republic of Germany (Rs. 302 million against Rs. 181.78 million), France (Rs. 192.55 million against Rs. 101.70 million), Italy (Rs. 197.48 million as compared to Rs. 97 million), Netherlands (Rs. 136.37 million as opposed to Rs. 65.66 million) and Belgium (Rs. 117.88 million as against Rs. 98.77 million). The United Kingdom also increased its offtake to the tune of Rs. 909.80 million in comparison with Rs. 786.35 million. □

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EXPORT SUCCESS IN ELECTRICAL EQUIPMENT

In the successful efforts of export promotion and diversification, modern India's electrical sector has come to contribute substantially. Till recently, the Indian economy was heavily dependent on the import of even basic electrical equipment. The varied accomplishments of a wide range of electrical products on the expor front reflect today a notable revolution in its production capability and marketing efficiency.

Not only India's export earning of electrical machinery, appartus and appliances has been on consistent rise but new categories of manufacture in newer ranges to a larger importing community abroad are being added to the outflow of supplies year after year. In the year 1971-72, the export value of these products totalled Rs. 187 million as compared to only Rs. 161 million in the preceding financial year. The period that followed 1971-72 witnessed further growth in the export trade. Even in the first half of 1972-73, the foreign exchange netted by this group of products was of the order of Rs. 125 million.

The broad categorisation of electrical machinery exports would indicate the diversification achieved in overseas supply. For the year 1971-72, the group of electrical power machinery and switchgears earned Rs. 47.5 million, while equipment for distributing electricity netted Rs. 54 million, telecommunication apparatus about Rs. 30 million, domestic electric equipment over Rs. 15 million and others electrical machinery and apparatus Rs. 39 million. There has been a noticeable shift-over in the picture of foreign importers for these products in recent years. While the co-developing markets of Afro-Asian region are being strengthened, the developed economics too have come to depend on Indian supplies for a variety of electrical products for competitive considerations of quality, pricing and marketing.

In the endeavour to promote and broaden the export structure of electrical equipment from India, the example of a Madras firm, M/s. Easun Engineering Co. Ltd., 5-7, Second Line Beach, Madras, deserves mention The range of electrical equipment exported by the firm has earned reputation for India for quality and performance. During the last four years, the company's share of exports is in the range of Rs. 40 million in equipment and services. Their exports include transformers, switchgears and general engineering and structurals.

The firm has supplied, among others, transformers and erected transmission lines to Kuwait and executed orders for transformer sub-stations to Nigeria, Tanzania and Kenya. Supplies of transformers have also been made by them to Malaysia, Sudan, Zambia, United Arab Emirates, Uganda and Guyana. They exported fabricated Steel Structurals also to Saudi Arabia. Among the Easun range of manufacture are HHE Transformers, Easun Switchgear, Espar Electrical Stampings and General Engineering and Structural items.

The company's expertise embraces all aspects of engineering services, including complete industrial electrification and general engineering and structural services. They also undertake design, erection, supply, commission, testing, after-sales service and project consultancy, including complete sub-station work upto 220 KV. A Government of India recognised Export House, M/s. Easun has in the past won the award for outstanding export performance from the Engineering Export Promotion Council, Calcutta.

BOOST IN DYESTUFF EXPORTS

Overseas supplies of India-manufactured dyestuffs have increased from year to year. During 1971-72, these products brought in foreign exchange to the tune of Rs. 24.78 million. The exports value was only Rs. 2.98 million in 1967-68. Within a year, the exports rose nearly four-fold to fetch Rs. 11.20 million in 1968-69 and reach a level of Rs. 15.34 million in 1969-70 and Rs. 24.10 million in 1970-71.

During 1971-72, the composition of exports was : acid dyes Rs. 2.31 million; basic dyes Rs. 2.18 million; direct dyes and sulphur dyes Rs. 6.26 million; disperse dyes Rs. 0.22 million; solvent dyes and organic pigments Rs. 0.03 million; reactive dyes Rs. 3.23 million; vat dyes Rs. 4.89 million and other organic synthetic dyes Rs. 2.65 million.

During the first six months of 1972-73 (April - September 1972), dyestuffs were exported to the tune of Rs. 22.32 million. Japan, Switzerland, Netherla U.S.S.R., U.K., U.S.A., Iran, Hong Kong, K Republic, Arab Republic of Egypt, Federal Repu of Germany, Argentina, Yemen Republic, Ugand Kenya and Italy were the prominent importi destinations.

M/s. Atul Products Ltd,. P. O. Atul, via Bulsa Gujarat State, one of the firms, engaged in the manu facture of dyes, chemicals, pharmaceuticals and dy intermediates have to their credit a sizeable expo performance. Their exports of dyes and dye interme diates in 1972 have crossed Rs. 10 million mark. The hope to further increase their exports substantially.

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The firm's production range includes sulphanitic acid, tobias Acid, Phenyl J. Acid, Bon Acid, J. Acid urea, J. Acid, Rhodulene Acid, Gamma Acid, G. Salt, Phenyl peri Acid, Chicago Acid, H. Acid, Dinitrostibene disulfonic acid, diaminostilbene disulfonic acid, diaminostilbene disulphonic acid (Di sodium salt), P-Nitro toluene sulfonic acid, metanilic acid and sodium naphthionate.

The dyestuffs and dyes intermediates manufactured by the firm are being used in a large number of industries, particularly in textile industry, leather industry, paper industry, wool industry, beverage industry and dye tubes industry. The products are popular abroad for their high quality.

Yet another firm, M/s. Indian Dyestuffs Industries Limited, Mafatlal House, Backbay Reclamation, Bombay-1, exported dyestuffs and other allied products to the tune of Rs. 15 million in 1971-72. Their supplies were directed to a large number of developing countries as also to sophisticated markets of U.S.A., Japan, Federal Republic of Germany, Switzerland, U.K. and U.S.A.

Although of recent origin, India's dyestuff industry has made rapid strides in production as well as in the export field. In the organised sector, 21 units were engaged in the line in 1971. The number of units, installed capacity and actual production of various varieties of dyestuffs in 1971 was : 9 units, 2675 tonnes and 2471 tonnes (Rs. 59.70 million), for Azo Dyes; 8 units, 403 tonnes and 225 tonnes (Rs. 9.60 million) in respect of Acid Direct dyes (other than Azo); 6 units, 1107 tonnes, 648 tonnes (Rs. 24.90 million) in respect of basic dyes; 9 units, 480 tonnes, 208 tonnes (Rs. 8.00 million) in respect of disperse dyes; 3 units, 1398 tonnes, 748 tonnes (Rs. 21.60 million) in respect of fast colour bases; 5 units, 1285 tonnes, 1331 tonnes (Rs. 44 million) for naphtol; 9 units, 2431 tonnes, 1532 tonnes (Rs. 59 million) for organic pigments; 3 units, 854 tonnes, 1592 tonnes (Rs. 52.60 million) for pigment emulsion; 4 units, 745 tonnes, 530 tonnes (Rs. 30 million) for reactive dyes; 4 units, 581 tonnes, 185 tonnes (Rs. 7.30 million) for stabilised azoics; 2 units, 2506 tonnes, 1420 tonnes (Rs. 8.30 million) in respect of sulphur black and 2 units, 108 tonnes, 42 tonnes (Rs. 0.8 million) pertaining to sulphur dyes other than black.

ELECTRIC MOTORS TO WEST GERMANY

India manufactured electric motors. starters and electric pump sets have come to enjoy growing popularity abroad. In 1971-72, these items are estimated to have fetched foreign exchange at a value of Rs. 12.67 million as compared to Rs. 10.95 million in the preceding year.

In 1971-72, electric motors and starters were the major area of export dynamism, having secured Rs. 11.19 million against Rs. 10 million in 1970-71. Federal Republic of Germany was the principal importer whose total intake was valued at Rs. 4.42 million, followed by Malaysia at Rs. 1.46 million, Arab Republic of Egypt at Rs. 1.09 million and Singapore at Rs. 0.75 million. Sudan, South Vietnam, Thailand, Switzerland, United Kingdom, New Zealand, Philippines, Kenya, Sri Lanka, Australia and Ghana were among other buyers.

The exports of electric pump sets, yet another category popular abroad, impoved its foreign exchange earning from Rs. 0 23 million in 1970-71 to Rs. 0.71 million. Federal Republic of Germany, Malaysia, South Vietnam, Sudan, Saudi Arabia, Singapore and Arab Republic of Egypt were the prominent buyers. Electric motor starters were supplied to various countries to fetch Rs. 0.71 million in 1971-72. Its offtake during the preceding year was more or less at the same level. Major destinations include Kenya, Indonesia, Arab Republic of Egypt, Bahrein Islands, Nigeria, Malaysia, Ghana, Singapore and Thailand.

Adding to the export effort in the line, M/s. New Government Electric factory, a public limited company, Byappanahalli, Bangalore, recently secured export contracts for the supply of about 2500 motors, valued at Rs. 5 million to M/s. A.E.G. Telefunken of Federal Republic of Germany.

The Bangalore firm's total exports for the year 1971-72 were of the order of Rs. 8.7 million. Their range of products includes transformers, motor switchgears, electric motors and other electrical goods. Lately, the firm has entered the field of project business involving planning, supply, erection and commissioning of electrical equipment on a turn-key basis for traction sub-stations, electrolysis plants, refineries, fertiliser plants and other major industries.

In 1971, the production of electric motors of the 20 units in the organised sector was of the order of 2.37 million HP while their installed capacity was of the order of 2.57 million HP.

TALCUM POWDER TO CANADA

Contribution of toiletries and cosmetics including essential oils and perfume materials and cleansing preparations to India's foreign exchange earning from the overseas supplies of non-traditional products, is rising consistently. From Rs. 68.73 million in 1968-69, the exports rose to Rs. 71.20 million in 1969-70. After maintaining the same level in the following year at Rs. 71.27 million, the exports rose sharply to Rs. 86.38 million in 1971-72.

The group of essential oils, perfume and flavoured material netted Rs. 39.26 million in 1971-72. Sandalwood oil constituted the largest single item, having fetched Rs. 26 million. Lemon grass oil (Rs. 8 million), Palmarosa oil (Rs. 2 million) and other natural oils (Rs. 2.85 million) were among the other items exported. Among the prominent importing countries were U.S.A., France, U.S.S.R., U.K., Switzerland, Japan, Sudan, Australia, German Democratic Republic and Federal Republic of Germany.

Besides, lavender oil, keora oil, ginger oil, eucalyptus oil, clove oil, cedarwood oil, anise oil, patchauli oil, peppermint oil, sandalwood oil, vetiver oil, oil of spices and synthetic flavour perfumes were the other items active in exports.

The next important group of perfumery and cosmetics, dentifrices and other toilet preparations (except soaps) brought in Rs. 31.95 million. Agarbattis, cosmetic toilet preparations, spirituous toilet preparations, talcum powders, hair oils, face creams, brilliantines, hair creams, shaving creams, hair shampoos (spirituous and non-spirituous), tooth powders, toilet powders, tooth pastes, perfumes containing spirit and eau-de-cologne were the prominent items exported in this group. U.S.A., Ethiopia, Singapore, Nepal, Tanzania Republic, South Yemen People's Republic, U.K., Saudi Arabia, Uganda, Fiji Islands, Hungary, Canada, Czechoslovakia, Kuwait and Malaysia were the prominent markets for these items.

Soaps and cleansing preparations, yet one more group earned Rs. 15.18 million. Soaps of all types, synthetic detergents, polishes and preparations were mainly supplied to U.S.S.R., Nepal, Singapore, Malaysia, Fiji Islands, Thailand and U.S.A. during the year.

During the first 6 months of 1972-73 (April-September 1972), the exports of this broad group totailed Rs. 50.62 million as against Rs. 42.69 million in the comparable period of the preceding year. During this period, essential oils, perfume and flavour materials earned Rs. 19.05 million while the share of perfumery and cosmetics, dentifrices and other toilet preparations was of the order of Rs. 24.25 million. Soaps, cleansing and polishing preparations fetched Rs. 7.32 million.

Recently, one Indian firm, M/s. Tolbro International, Bombay, engaged in the manufacture of toiletries and cosmetic preparations bagged a sizeable export contract from Canada for the supply of 100,000 cans of luxury talc to that country. The new talc under the brand name 'Easy Day' has been recently introduced by the Bombay firm. Production of talcum powder in 1971 by the 11 units in the line in the organised sector, was of the order of 3.4 million kg. In 1970, though the number of units in the line was 16, their production at 3.49 million kg. was of the same level as in 1971.

EXPORT PERFORMANCE AND POTENTIAL

ON GENERALISED SYSTEM OF PREFERENCES

Inaugurating a seminar on Generalised System of Preferences, organised by the Indian Institute of Foreign Trade, India's Minister of Commerce, Prof. D.P. Chattopadhyaya stated that although the GSP system might not make too significant a contribution to the product and development process in the developing countries, it has indeed opened new opportunities for India's export trade. "Since the offers (under the GSP) are not unlimited, it is essential that we should take full advantage of whatever prospects have been made available under it. India is capable of taking advantage of the concessions".

The GSP scheme has been launched with the objective of increasing the export earning of the developing countries, to promote their industrialisation and to accelerate the rate of their economic growth and is now confined to semi-manufactured and manufactured products with notable exceptions. The Scheme is conceived to act as a catalyst in promoting the economic development of the developing countries by assisting the growth of new industries through an easier and assured market access to the prosperous countries. It is also expected to stimulate public and private investment in setting up factories by assisting transfer of technology and know-how that usually accompanies foreign investment and finally by providing new jobs and generally increasing economic activity in the relatively poorer countries.

It took the international community over eight years to reach an agreement on the Preference Scheme. There has been and still is some gap in implementation of this Scheme. Barring European Economic Community, Japan and Norway that introduced their Schemes in 1971, other countries, except the U.S.A. and Canada, introduced their Schemes in 1972. It has been calculated, that only 22 to 23 per cent of dutiable goods of the developing countries entering in EEC and Japan respectively have been benefitted by the Scheme. "If the Scheme is to prove really beneficial to the developing countries, it is necessary that the restrictive clauses should be replaced by special measures and programmes of adjustment assistances by the concerned developed countries. The coverage of the Scheme must also be extended to include all processed and semi-processed commodities and manufactures and semi-manufactures of current export interest to the developing countries".

The Commerce Minister expressed satisfaction that four of the five socialist countries of Eastern Europe which maintain customs tariffs, have since made their Schemes of Preferences effective. He regretted, however, that two important developed market economy countries, namely, U.S.A. and Canada, have not yet implemented Schemes. Their non-implementation is affecting the balance of efforts and benefits envisaged under the Scheme.

The Minister pointed out that the GSP would not be really effective unless supplementary measures were taken to make the domestic market systems of the tariff preference giving countries less restrictive. He referred to certain structural problems of international trade which could not be set aside as unrelated to the GSP. The governments of the developed market economy countries have adopted a number of internal measures like tax benefits, subsidies, assistance to vocational training, research and development in industry, which in effect provide greater protection than customs duties. Further, the increasing importance of multinational corporations in the world trade has posed a problem that went beyond that of Restrictive Trade Practices. It would, therefore, be necessary, the Minister added, to not only improve and supplement the Scheme, but also to find solutions to these structural problems.

Again the value of preferences in respect of all the West European Schemes would be considerably diluted with the enlargement of EEC and the formation of a continental block of the whole of Western Europe, Mediterranean and African countries. About three-fourths of the enlarged community's imports from developing countries would lose much of their preferential values. The possible adoption of the Community Scheme by the U.K. and Denmark would also imply replacement of their relative liberal schemes of generally free access, by a common EEC system which is circumscribed by ceilings, tariff quotas and purchase limitations. Also the conversion of the U.K. tariff to the level of the common external tariff of the community would employ some cuts to the preferntial margins granted by the U.K. to the developing countries. "India would be a loser in the U.K. market as the Commonwealth Preferences would cease with the U.K.'s entry. These negative effects can be offset, at least partly, if the developing countries are treated at par with the affluent members of the EEC. This would mean elimination of negative lists and removal of special restrictions imposed on products such as all types of textiles, cotton, jute, coir and footwear".

Notwithstanding the various limitations, the Minister hoped that the Indian economy is capable of taking advantage of the concessions offered under the GSP Scheme. "Speed and efficiency in our operation to supply goods of consistent quality and required quantity are very essential. We should set the GSP targets and work for them".

Delivering the presidential address at the inaugural session of the seminar, Mr. B.B. Lal, Secretary, Ministry of Commerce, and the Chairman of the Indian Institute of Foreign Trade, provided guidelines for an action-oriented plan for effectively utilising the new opportunities offered by GSP. Mr. Lal referred to the number of tariff and non-tariff barriers that have for long stood in the way of the developing countries to obtain a reasonable access to markets in the developed countries. Constant pressure for being allowed to have better access to the developed markets succeeded ultimately in the emergence of the Generalised Scheme of Preferences, the basic idea underlying which was that the developed countries should evolve a scheme of allowing tariff concessions for export of developing countries on a non-reciprocal and non-discriminatory basis, the Commerce Secretary also referred to the need for considerably improving the Schemes evolved so far. Most of the Schemes provide a limited coverage; many of them provide restrictive quotas and some exclude items like jute, coir and tobacco which are important in India's export trade. He, however, pointed out that it would only be proper to concentrate not so much on the shortcomings as on ways and means for making the fullest utilisation of the Schemes that are available.

For a fuller utilisation of the new opportunities, the Commerce Secretary pointed out that full and proper publicity among the manufacturing and exporting interests within the country should be arranged for promotional efforts to be undertaken in the fields of export production, marketing, ensuring quicker and timely deliveries and establishing lasting relationships with the importers in the GSP offering countries. He expressed hope that such full utilisation of the opportunities under GSP would help India in her exports to new heights in the years to come.

TEXTILE FIBRES ACTIVE ON EXPORT FRONT

As against the export earning worth Rs. 117.58 million during the first six months of 1971-72 (April-September 1972), the exports of textile fibres and their waste (not manufactured into yarn, thread or fabrics) from India rose substantially to a level of Rs. 189 million during the corresponding period of 1972-73, registering a notable increase of over 60 per cent.

Almost all the categories evinced sizeable export growth during the period under review of 1972-73. Cotton constituted the major area of export growth, having earned Rs. 128.59 million as against Rs. 88.28 million. Japan, Bangladesh, Bulgaria, Czechoslovakia, U.S.A., German Democratic Republic and U.K. were the prominent purchasers. Jute was the next important area where the exports looked up sizeably from Rs. 6.29 million to Rs. 27.16 million. USSR, Uganda, Japan, Belgium, Kenya and Australia were the leading buyers. Earning Rs. 26.30 million as against Rs. 19.58 million, the category of wool and other animal hair (except human hair) recorded nearly 33 per cent increase. The countries responsible for major offtake included USSR, UK, Belgium, France, USA, Australia, Japan and Netherlands.

The categories of silk fibres and waste, synthetic and regenerated fibres (man-made fibres), and waste materials from textile fabrics (including rags), too witnessed marginal improvement. The export value of silk fibres and waste during April-September 1972 improved to Rs. 3.73 million from Rs. 2.20 million while that of synthetic and regenerated fibres increased to Rs. 0.61 million from Rs. 0.19 million. The foreign exchange earning of waste materials from textile fabrics was also up at Rs. 1.66 million as against Rs. 1.54 million.

ABOUT ASIAN ECONOMIC MARKET

Although no definite proposal has been considered by the Government of India, there have been significant initiatives under the auspices of the Economic Commission For Asia and Far East (ECAFE) for closer economic cooperation among the countries of the region. Several member governments at ECAFE including the Government of India have evinced interest in such a move.

It is a recognised fact that trade expansion and regional integration among developing countries would make an important contribution to the developmental process. In the Asian region, the possibility of such a regional cooperation has received the attention of the Economic Ministers of Asian States since 1961.

The Third Ministerial Conference for Asian Economic Co-operation (1968) evolved and adopted a strategy for integrated development by regional cooperation in Asia. The Ministerial Conference was later on converted into an Asian Council of Ministers (1970). A comprehensive Declaration was adopted in the Council's meeting at Kabul (1970) and the more concrete decisions at the Declaration pertained to setting up of committees to examine further regional schemes of economic co-operation relating to trade expansion, clearing arrangement and a reserve scheme. The most important of these schemes relates to the Asian Trade Expansion Programme. For the first time, the Programme proved to be a crystallisation of ideas towards regional cooperation and related spheres. Among the ideas, not only tariff exchanges but other measures regarding non-tariff barriers, industrial collaboration, joint commodity action, state trading, government purchasing and long-term arrangements have figured prominently. When the actual negotiations start in this context, there will be exchange of "request" lists and "offer" lists. Increased imports could take either the form of diversion of each member country's imports from outside the region to the Asian region or additionality in imports. It would be necessary to liberalise imports to some extent in semi-processed, processed and manufactured goods, since most of the developing countries aim at a larger production of manufactures and export of manufactured items is a prestige symbol for them.

In the context of regional monetary cooperation, the proposed Asian Clearing Union is intended to promote the use of national currencies of the participating countries for mutual trade, thus providing additional liquidity for foreign transactions. Also the Asian Reserve Bank that has been proposed is to enable regional member countries to pool part of their monetary reserves for regional development and for financing temporary balance of payments deficits There have been other schemes of regional cooperation in which the ECAFE played an important role. The projects under such schemes include the Mekong Project (1957), the Asian Highway Project (1965), the Asian Development Bank (1966), the Asian Industrial Development Council (1966), the Asian Coconut Community (1969), the South East Asia Iron and Steel Institute (1971) and the Pepper Community (1971).

Among the other undertakings that are now taking shape are the Trans-Asian Railway Project, Commodity Arrangements on community projects for rice, rubber and tin, Asian Shipping and Port Development, Industrial Development through joint-ventures, Off-shore prospecting for mineral resources, the Asian Telecommunications Network and Mineral Resources Development Centre.

The Government of India have all along welcomed initiatives on promoting economic cooperation among ECAFE countries. In regard to the sub-regional groupings, its view is that such a form of cooperation would be beneficial in certain types of economic activity such as industrial collaboration and joint ventures. In regard to matters like trade, the Indian Government feels that schemes on a regionwise basis would yield greater benefits. Time and again, the representatives of the Indian Government urged at the meetings of the ECAFE that sub-regional groupings should not be insular or inward looking and should be promoted within a broad framework of regional cooperation provided by the Asian Council of Ministers.

CASHEW EXPORTS UP

India's exports of cashew kernel reached a record high of Rs. 610 million during the first ten months of 1972-73 (April 72-January 73), registering an increase of 10 per cent over the export earning of Rs. 554 million during the corresponding period of the preceding year. Quantumwise, 54,478 tonnes and 58,448 tonnes were supplied abroad during the two periods.

The exports (Rs. 610 million) effected during the period under review of 1972-73 clearly indicate that they are poised to break the record of the entire preceding year (Rs. 617.30 million).

During 1972-73 (April 72-January 73), U.S.S.R. emerged as the leading buyer which imported 22,165 tonnes, valued at Rs. 221.38 million, replacing U.S.A. which was the topmost importing country last year (Rs. 273 million). Next to U.S.S.R., U.S.A. was the second important destination whose intake was valued at Rs. 190.62 million (19215 tonnes). Canada bought worth Rs. 58.20 million (5195 tonnes) while Japan absorbed worth Rs. 20 million (1757 tonnes). The purchases of other prominent countries were: U.K. Rs. 16.46 million (1603 tonnes); German Democratic Republic Rs. 13.72 million (1809 tonnes), Australia Rs. 12.73 million (1145 tonnes), Czechoslovakia Rs. 8.10 million (748 tonnes) and Federal Republic of Germany Rs. 7.30 million (884 tonnes). Netherlands, Rumania, France, Bulgaria, Hong Kong, Iran, Hungary, Kuwait and Lebanon were among other buyers.

Cashew shell nut liquid exports during the period under review of 1972-73, however, suffered a marginal set-back at Rs. 4.60 million (3875 tonnes) compared to the export value at Rs. 5 million (4426 tonnes) in the same period of the pervious year. During the period, U.K. emerged as the major purchasing country having absorbed 1995 tonnes valued at Rs. 2.07 million. Japan wes the second important destination which imported 1203 tonnes, valued at Rs. 1.48 million, followed by USA at Rs. 0.45 million (333 tonnes), Rumania at Rs. 0.13 million (108 tonnes) and Korea Republic at Rs. 0.16 million (90 tonnes).

PETROLEUM PRODUCTS EARN MORE

India has recently entered the export field for petroleum products, though on a limited scale. During the first six months of 1972-73 (April-September 1972), the country's export earning in the line amounted to Rs. 67 million, registering an increase of over 75 per cent against the export performance at Rs. 38 million during the corresponding period of the preceding year (1971-72).

During the period under review of 1972-73, diesel constituted the major export item in the category. It earned as much as Rs. 24.19 million (30,864 tonnes), accounting for more than 35 per cent of the entire export value of petroleum products. Next to diesel, kerosene was the second important item which brought in substantial earning at Rs. 19.30 million (36.95 million litres). Light distillates was yet one more variety responsible for sizeable foreign exchange earning at Rs. 16.17 million (18.72 million litres).

During the period, the export value of lubricating oils and Grease (containing 70 per cent and below 70 per cent weight of petroleum product) was of the order of Rs. 5.44 million (3933 tonnes). Mineral waxes, residual fuel oils (heavy ends), pitch from coal tar or other mineral tars, petroleum bitumen and other residues and bituminous mixtures were also active in the export trade.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PROGRESS AT TIRUCHI BOILER PLANT

Of the three units of Bharat Heavy Electricals Limited at Hyderabad, Rishikesh and Tiruchirapalli, the third plant is engaged in the manufacture of power boilers. It manufactures high-pressure boilers for thermal power stations and for industrial requirements. The plant has collaboration from Czechoslovakia, the Czech collaborator having been in the steam boiler production for over a century and a quarter.

Mainly manufacturing steam generating equipment, the high pressure boiler plant employs the latest designs in boiler construction and one of the most economic mechanisms of heat transfer in high pressure and high temperature systems. For the first time in India, the plant has adopted the latest welding processes.

With an installed capacity of 3600 tonnes of boilers per annum, the value of the plant's production of boilers and boiler mountings was in the neighbourhood of Rs. 300 million in 1971. Of the three manufacturing units licensed in India to take up the manufacture of boilers required by thermal stations upto 200 MW, the Tiruchi plant is the foremost. Besides power boilers, industrial boilers of various types and ranges and boiler mountings are also being produced in the country.

The Tiruchi plant is engaged in continuous efforts to develop and perfect newer designs to meet the more diversified types of fuel availability. The plant's engineers are capable of engineering the entire production range on the basis of domestic know-how, covering boilers, boiler houses and accessories. It is stated that the Design Department of the plant is indeed the "pride of the whole show". The Design Department works in close collaboration with the Regional Engineering College nearby, where BHEL sponsors candidates for undergoing advanced courses in power engineering designs.

Under collaboration with the renowned American firm, M/s. Cumbustion Engineering, M/s. BHEL are currently designing higher capacity boilers. The Tiruchi plant is capable of engineering heavy equipment upto 120 tonnes and has facilities for fabrication of complicated pipe systems and installations needed for heavy industries.

The wide range of boiler production at the plant includes high pressure boilers for thermal power station of 30 MW, 60 MW, 100 MW in the non-reheating sector and 110 MW, 120 MW to 310 MW in re-heating sector.

Besides complete engineering responsibility for a boiler house, including accessories like fuel preparation sytems, external pipe and instrumentation, the plant also undertakes the job of producing industrial boiler ancillaries, medium and higher pressure valves, waste heat boilers and heat exchangers. Indeed, the plant has capacity to undertake turnkey jobs to erect the testing and commissioning equipment to specific requirements of customers both at home and abroad.

EXPANSION OF COCHIN AND KOYALI REFINERIES

The expansion programme for increasing the refining capacity of the Cochin Refinery from 2.5 million tonnes per annum to 3.3 million tonnes is in progress and is expected to be completed by June 1973.

The total cost of the expansion project is estimated at Rs. 57 million with a foreign exchange conponent of nearly Rs. 10 million. The process design of this expansion was obtained by Phillips Petroleum Co. and the construction contract was given to M/s. Engineers India Limited on the basis of tenders. Alongwith the expansion scheme, the refinery is also adding facilities for the manufacture of liquified petroleum gas. The LPG manufacturing and bottling facilities are estimated to cost Rs. 0.42 million.

In addition to the expansion of Cochin Refinery, the 4.3 million tonne oil refinery already functioning at Koyali in Gujarat, and processing crude oil from the Ankaleswar and North Gujarat oil fields, is proposed to be expanded to a capacity of 7.3 million tonnes.

The expansion contemplates processing of imported crude in addition to indigenous crude. The imported crude would be received at an off-shore terminal in the Gulf of Kutch and transported through a pipeline to Koyali. It is proposed to have a branch line to Koyali from the main line which would carry imported crude to the Mathura Refinery.

The refinery expansion project is estimated to cost Rs. 280.80 million with a foreign exchange component of Rs. 76.70 million. The project would be executed by the Indian Oil Corporation who would seek the assistance and cooperation of the Government of Gujarat.

ACRYLIC FIBRE PLANT NEAR BARODA

An Acrylic Fibre Plant capable of producing 12,000 tonnes per year of Acrylic fibre is proposed to be set up near Baroda by the Petro-Chemical Corporation Ltd., a public sector undertaking. The fibre will be produced for the first time in the country and will partly substitute imported wool. The fibre can also be blended with other natural or synthetic fibres.

The plant which is proposed to be procured from Japan will be established under Indian Petrochemicals Corporation Ltd., as one of the down-stream units of the Gujarat Petrochemicals Complex and is scheduled to be completed in 1975. The technical know-how from Japan for the plant will include fully detailed description of process. It will also include information on manufacture of high shrinkable staple fibre and exchange of technological improvements for a period of five years after the plant starts up. IPCL personnel will also be trained in Japan in plant operation, maintenance and market development.

The expenditure on machinery and equipment for the entire plant is estimated at Rs. 103 million. Of this, about 30 million will be on account of indigenous equipment.

RAILWAYS PROGRESS TOWARDS SELF-SUFFICIENCY

India has achieved near self-sufficiency in the manufacture of railway rolling stock equipment. The dependence on imports which was 30 per cent in 1951-52 has been brought down to less than 10 per cent. During 1971-72, the Railways purchased stores and equipment worth more than Rs. 4130 million, of which imports accounted for only Rs. 400 million.

The import content in railway stores was 27 per cent during 1951-56. It came down to 24 per cent in the Second Plan (1956-61) and 12.4 per cent in the Third Plan (1961-66). Imports are now limited to only essential raw materials, proprietory items and other "hard core" items.

Imports of certain components and items has, however, become necessary as the indigenous capacity already installed is not able to meet the entire requirements of the Railways. These include wheel sets, electric traction equipment, steel sections and diesel axles and traction gears.

Chittaranjan Locomotive Works has achieved about 78 per cent indigenisation in the manufacture of electric locomotives. The import content of diesel hydraulic shunters, made at Chittaranjan has been reduced from 71 per cent to 29 per cent in the last four years. Similarly the Diesel Locomotive Works at Varanasi has reduced the import content of diesel electric locomotives from 98 per cent in 1963-64 to 31 per cent as of now. The import content of broad gauge passenger coaches manufactured by the Integral Coach Factory, Madras, is now only 2.5 per cent, excluding the cost of steel.

Besides encouraging the private sector factories to develop capacity, the Railway's workshops in the country have turned out specialised equipment like 35-ton cranes at the Izatnagar Workshop of the North Eastern Railway. The country's first rail-mounted broad-gauge 75-ton steam breakdown crane rolled out of the Jamalpur workshop of the Eastern Railway in January 1972. At present the Railways are not importing an cranes.

Creditably, the progress in indigenous developmen of the manufacture of equipment and stores has bee achieved, despite the fact that the modernisation plan of Railways mean reliance on imports in the earlie stages of the introduction of diesel and electric tractio sophisticated methods of signalling, track maintenanc and the like.

The Railways have been carrying on a sustai drive to encourage indigenous manufacturers to mee their requirements, apart from stepping up manufa turing capacity in the Railways own production unit Advisory Committees keep in touch with entrepreneu for indigenous development of imported items Railway equipment.

Constant liaison is also maintained with the Director General of Technical Development and othe agencies in the public and private sectors to speed u the pace of indigenous development. Special incentive are provided to manufacturers in the form of pric preferences and placing of orders.

DMT UNIT TO START TRIAL PRODUCTION

The DMT unit of the Aromatics project of th Gujarat Petrochemicals Complex is expected to st trial production soon. The unit has been mechnicall completed and pre-commissioning tests are now takin place. The Xylenes plant of the Aromatics project expected to be mechanically completed by the end this month and trial production is expected to start May 1973.

The Aromatics project would have an ann capacity of 24,000 tonnes of DMT used for the man facture of Polyester fibre, 21,000 tonnes of Orth xylenes used for making Phthalic Anhydride a 25,000 tonnes of Mixed-xylenes used for makin solvents.

Detailed engineering of the Olefins project (Neptha Cracker) is now underway. Major equipment, both indigenous and foreign, have been ordered and civil construction has started. The Government have approved foreign collaboration agreements for the downstream units of the Olefins project and the Indian Petrochemicals Corporation has already executed these agreements.

The downstream units of the Olefins project would be for the manufacture of Poly-propylene, Acrylonitrile, Ethylene Glycol, Detergent Alkylate and Synthetic Rubber. Collaboration agreements for Polyethylene and Acrylic Fibre are at the moment being considered by the Government and are expected to be finalised shortly.

PRODUCTION OF TITANIUM PRODUCTS

The manufacture of titanium dioxide from ilmenite has been in substantial progress at Messrs Travancore Titanium Products, Trivandrum. The Trivandrum plant is currently engaged in a major expansion scheme with an installed capacity at a cost of Rs. 85 million. From the middle of this year, 68 tonnes of titanium dioxide are to be made available by that plant as against its current level of production at 18 tonnes a year.

Titanium Products enjoy prominent position among white pigments by virtue of their brilliant colour, cowering power, chemical stability and non-toxicity. Titanium is an essential raw material for industries such as paint, paper, textiles, rubber, ceramics, leather, plastics and cosmetics.

The Trivandrum plant is currently able to meet half of the domestic demand. It is also planning to set up a large titanium complex in Chavara at a cost of Rs. 500 million where titanium tetrachloride, titanium dioxide, rutile and titanium metal sponge are planned to be produced among others.

The beach sands of Kerala and Tamil Nadu are reported to contain large resources of ilmenite. Annual production of this mineral is in the neighbohood of 50,000 tonnes.

MORE HOTELS FOR TOURISTS

The Government of India have recently approved six hotel projects to be set up in public sector. Of these, four projects were expected to be ready by the end of this year. In all, the projects approved will provide for more than 1,000 rooms. Another 30,000 to 32,000 hotel rooms would be added by 1980. There would also be provision for supplementary accommodation in youth hostels and wild life lodges. Estimated tourist traffic by 1980 is expected to be of the order of 1 million numbers.

The Government of India also plans to provide loans for construction of one star and two star hotels for the benefit of lower income tourists. The intention is to facilitate the setting up of larger number of such hotels. In addition, every effort is being made to ensure that facilities and amenities provided at tourist centres were comparable with international standards.

CRAWLER SHOVEL EQUIPMENT

A crawler shovel equipment of 2.3 cubic metres capacity has been designed and developed in India for the first time by the Research and Development Division of Bharat Earth Movers Limited (BEML) at Kolar Gold Fields, Mysore.

The equipment is powered by 180 horse power diesel engine and is capable of five forward and four reverse speeds. Shovel operating mechanism is actuated by hydraulic cylinders operating at a pressure of 990 kilogram per 6.25 square centimetres.

The bucket used in the equipment can handle a payload of 4.6 tons. It has a fast cycle of loading and has sufficient reach and clearance to load 25 and 35 ton dumpers. The bucket has been manufactured from special steel to withstand very high abration. The equipment will find extensive use in dam construction, road building and coal and mineral handling.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

FAT LIQUORS FROM INDIGENOUS OILS

The Central Leather Research Institute (CLRI), Madras, has developed a process for the manufacture of fat liquors from indigenous oils made from sardine fish, pongam coconut and castor. These liquors are blends of emulsifying agents like sulphated oils and neutral oils (vegetable, marine and mineral) and find extensive applications in the processing of leathers.

The process envisages the sulphation of clarified oils of required specifications under standard conditions which vary with the type of oil for the specific types of fat liquors to be produced. The sulphated products are washed free of sulphuric acid and neutralized to the required pH. These are blended suitably with other oils and ingredients wherever necessary. Testing and quality control at different stages, starting from the raw material stage are very essential to maintain the standard of the product. Both the oil and finished products are to be of specific quality. These standards have to be specifically adhered to so that tanners get products of unifrom quality. The laboratory investigations have been carried out sucessfully at 2 kilo per batch.

It is estimated that about 1000 tonnes of fat liquors are required annually in the country. With the increase in the production of quality finished leathers, the demand for the product is expected to go up considerably. At present, the demand is met partly from the indigenous production and partly from import of oils like sperm and cod oils and related products.

The main raw materials required in the process are fish oil, pongaur oil, castor oil, groundnut oil, coconut oil, sulphuric acid, caustic alkali and solution. All these are available indigenously.

The main items of equipment required are lead lined jacketted reaction vessel, water chilling plant, industrial mixer, pumps, storage tanks, compressor pumps and industrial blower.

ANTI - MIST COMPOSITION DEVELOPED

Wind screens of vehicles flying at high altitudes are susceptible to fogging and misting under the prevailing sub-zero conditions when humidity is high. Consequently, visibility through the windscreens becomes poor. Snowgoggles and optical instruments fitted on tanks, guns etc. also get fogged under similar conditions.

At present, no composition is used to overcome this difficulty. However, a number of foreign compositions were examined for their suitability as anti-misting composition in the prevailing sub-zero conditions but of no avail. Consequently, the Defence Research Laboratory (Materials), Kanpur, has developed a new anti-misting composition, using a non-ionic detergent. Other ingredients were so selected that they have the property of melting the ice, maintaining the power point as low as possible and keeping the viscocity within workable range.

The main raw materials required in the process are fused calcium chloride, magnesium chloride, sodium silicate, sodium hydrogen phosphate, sucrose and glycerine. All these are available indigenously. The essential items of equipment required are stainless steel bucket and stirrer.

PROCESS FOR PRODUCTION OF PENTAERYTHRITOL

Regional Research Laboratory (RRL), Hyderabad, has developed a process for the production of pentaerythritol, an important organic intermediate used in the manufacture of synthetic resins and pentaerythritol tetranitrate, an explosive. Sodium formate is obtained as a by-product during the process.

Though at present, some firms are producing this chemical in the country, large quantities are still being imported. The import of pentaerythritol during 1970-71 was 1748.465 tonnes, valued at about Rs. 7 million. About 85% of the pentaerythritol consumption is by synthetic resins industry. The rest goes into the manufacture of pentaerythritol tetranitrate.

The process developed by RRL consists of reacting solutions of acetaldehyde and sodium hydroxide with solution of formaldehyde in a stainless steel reactor, under controlled and programmed temperature conditions. The reaction products are concentrated in an evaporator and pentaerythritol crystallised out in a crystalliser. Number of crystallisations depend on the purity of the product required. Finally pentaerythritol is dried in a dryer.

The work was carried out on a laboratory scale and also scaled upto a 6 Kg. per batch unit. The yields were 78-82 per cent on the basis of acetaldehyde. The product obtained in a typical run had the following specifications : Monopentaerythritol (95%), Dipentaerythritol (4.5%) and Ash, Moisture etc. (0.5%).

The product obtained compares well with the imported samples. The raw materials required in the process are formaldehyde, acetaldehyde, caustic soda and formic acid. All these are available indigenously.

The plant and machinery required are stainless steel (s.s.) reaction kettle with condenser, s.s. evaporator with external heat exchanger, s.s. receiving tank and crystalliser, s.s. centrifuge, electric or steam dryer, s.s. ion exchange columns, vacuum assembly, s.s. centrifugal pumps, storage and transporation tanks. These are also available indigenously.

NEW MACHINE FOR CONTINUOUS TEA FERMENTATION

A machine for continuous tea fermentation has been recently developed by the Tea Research Association, Jorhat, Assam, In conventional process, tea is spread on floor for some time and allowed to dry to desired degree. This process was manual as well as seasonal.

The new equipment developed by the Research Institute, makes process automatic. Trays containing tea leaves are passed to a heated chamber at controlled temperature so that oxidation of only phenolic compounds takes place. The process can be utilised throughout year. The machine has a big potential especially in the tea producing countries of the world.

CLEANING COMPOSITION FOR PRESERVATION OF SMALL ARMS

The Defence Research Laboratory (Materials) [DRL(M)], Kanpur, has indigenously developed a cleaning composition designated as 'Boreclap' for cleaning and preservation of small arms.

The existing practice is to clean the gasfouling from small arms after firing with boiling water, drying it with flannelette and subsequently applying oil 'A' (imported) for seven days. The procedure is laborious, long and involves the use of boiling water which is not easily available in high altitudes.

The procedure formulated by DRL (M) for cleaning and preserving small arms with 'Boreclap', dispenses with the necessity of using boiling water and subsequent treatment with oil 'A'. It is claimed that cleaning by Boreclap is much quicker and easier as compared to existing practice. Boreclap does not require more than 30 minutes for cleaning and subsequent lubrication. Being a water in oil emulsion, boreclap serves as a lubricating-cum preservative material for the arm while not in use.

Boreclap has been successfully tried in various field trials, technical trials and extensive troop trials. The developed composition has certain outstanding characteristics, namely, it does away with the use of boiling water; it does not freeze upto—40°C; it has very good corrosion preventive properties; it is useful both in hot and cold conditions; it has no deleterious action on wood, phosphated and painted surface; it is non-toxic and can be handled with bare hands and is completely indigenous.

Defence requirement of 'Boreclap' is estimated to be about 5,00,000 litres per year. The plant required in the procedure is only a reaction vessel of 1000 litre capacity with electrical stirring arrangement.

LIGHT WEIGHT WATER TANK DEVELOPED

The Research and Development–Establishment of Defence Research Organisation has recently developed a light weight self-supporting water tank. Made of nylon cloth, the tank has a capacity of 7000 litres. It has been accepted for introduction into service and is being produced on large scale.

TOWARDS SELF-RELIANCE IN FIFTH PLAN

India's Fifth Five Year Plan (1974-79) envisages that the objective of self-reliance will be carried a step further by reducing the net aid to zero in the terminal year of the Plan (1978-79).

The Resources Exercise for the Fifth Plan has assumed that the gross external aid over the five-year period would be at Rs. 30,000 million. Allowing for an estimated Rs. 16,000 million of debt repayments, the balance that would be available to the country will be Rs. 14,000 million. After making further adjustments involving a net outgo of Rs. 4,000 million in other components of the balance of payments on capital account, the surplus available for financing the current account deficit, including Rs. 7600 million of interest on foreign aid, has been estimated at Rs. 10,000 million. The balance of payments excercise for the Fifth-Plan requires that the current account deficit must be contained within this limit.

The Approach Paper to the Fifth Plan published by India's Planning Commission recently has ruled out the option for stipulating the rate of growth in the economy at less than 5.5 per cent per annum. The impact of a lower rate of growth falls more than proportionately on the key and basic industries that provide the sinews of growth. The strain on the balance of payments arises primarily from two factors. The first is the heavy debt service obligation estimated at Rs. 23600 million (debt repayments and interest on foreign aid) over the Fifth Plan. The other major factor is the large requirements for maintenance of imports. The heavy debt service obligation substantially affects the country's manoeuverability on the balance of payments front. The maintenance imports which constitute about 80 per cent of the total estimated imports in the plan period can be met only by producing the needed goods unless domestic production at reasonable costs is not feasible. In other words, there has to be an accelerated creation and fuller utilisation of capacity in basic fields of production like steel, non-ferrous metals, fertilizers, crude oil, petro-chemical products, engineering ancillaries and basic chemicals. At the same time, efforts to consolidate self-sufficiency in food grains and to step up the output of cotton and oilseeds must continue. Better utilisation of available substitutes for cotton and oilseeds would also save on imports of these items. A solution to the balance of payments problem, consistent with the basic economic and social objectives stipulated in the Plan, could be shown to lie along these lines rather than in going slow with the overall rate of growth or in a pattern of development where basic industries get a reduced weightage.

The current account deficit referred to above can be contained within a limit provided there can be reduced inequality with its beneficial impact on the balance of payments, a 7 per cent annual rate of growth on exports and an order of import substitution that would be feasible if the envisaged growth of basic industries materialises.

Referring to the objective of export promotion, the Approach Document states that this objective would be of paramount significance for success in the self-reliance objective. It is essential to emphasize this because the country's achievements in exports have not always come upto expectations. In an economy like India's, where exports constitute a small fraction of total production and the domestic market is not only sheltered but is also fast expanding, the need of choosing a set of policy measure is evident to provide the needed supplies for exports and an adequate incentive to producers to divert them from home sales to sales abroad.

The Approach Paper has identified three essential components of export policy, namely, planning of adequate capacities in export sectors; regulation of growth of domestic demand in line with the Plan targets and a system of taxes and incentives which would ensure an adequate rate of return on exports.

On the question of import substitution, the Approach Paper underlines the need to achieve success in such programmes as would contribute effectively to the growth of exports also. Maintenance of an adequate measure of price-stability would be important to ensure that exports retain their competitiveness in the international market.

The Approach Paper stated that as part of measures designed to reduce inequalities and to mobilise resources for development, both fiscal policy and industrial licensing policies must be so oriented as to discourage expansion of output of luxury goods, that cater to the requirements of higher income groups. Industries producing luxury goods involve a sizeable drain on foreign exchange and domestic resources. Ways and means should be found to use the exiting capacity for purposes of promoting exports, it further stated.

Emphasis on the development of domestic technology has also been placed by the Approach Paper in a drive for self-reliance. Many of the industries in the country have been set up on the basis of imported technology, often in the form of almost complete package of know-how and equipment. This was, perhaps, inevitable in the early stages of industrialisation. However, as a result of that very process as also of the efforts made in the development of indigenous research and design capability, the economy now has considerable technological capability in many fields. The Approach Paper stated that what would be needed was not a rejection of foreign technology but rather fashioning a mix of imported and indigenous technology in which the proportion of the latter steadily increases. Such a mix would have to be worked out not so much at the level of entire sectors of industry as in terms of the various elements of technology involved in the implementation of specific projects such as know-how, engineering, equipment, construction and installation, operation and maintenance. The bid for simultaneous and total self-dependence in regard to all these elements is often likely to be self-defeating. It might even burden the economy with delayed projects and serious underutilization of capacity. The essential thing, therefore, would be to identify the elements as discreetly as possible and assess which should be supplied from indigenous sources and which have to be imported. Wherever it is decided to import elements of technology programmes of research and development as also design engineering may be simultaneously formulated, aimed at absorbing and building on the imported technology. Only such an integrated approach would enable the country to move faster towards technological self-reliance thereby reinforcing economic self-reliance.

Thus, while the conclusion that the country can put through the fifth development plan and achieve the self-reliance objective is encouraging, the dimensions of the problem cannot be minimised in stepping up the production of items which are critical from the balance of payments angle and in organising the neccssary export drive.

It may be recalled that the objective of self-reliance to be realised within a definite time-schedule was explicitly formulated for the first time in India's Third-Five Year Plan. The Third Plan stated "the balance of payments difficulties the country is facing are not short term or temporary; they will continue for several years to come. The external assistance is essential for this period but the aim must be to make the economy more and more self-reliant, so that it is able to support within a period of ten to twelve years an adequate scale of investment from its own production and savings." The Fourth Plan sought to concretise the time phasing for realising the goal of self-reliance. The objective was laid down as "reducing foreign aid, net of the debt servicing to half of the current level by the end of the Fourth Plan and to eliminate it altogether as speedily as possible thereafter." The actual progress during the Fourth Plan period has been in line with expectations. The objective of reducing net aid to one half of the pre-Fourth Plan level is expected to be realised. Now the Fifth Plan envisages a step forward towards self-reliance by reducing the net aid to zero in the terminal year of the plan.

Based on the fundamental objectives of the Fifth Five-Year Plan (1974-79) namely, the removal of poverty and attaintment of economic self-reliance, ten main elements of the Fifth Plan strategy have been identified for the realization of these objectives. These elements refer to (a) 5.5 per cent overall rate of growth of gross domestic product; (b) expansion of productive employment opportunities; (c) a National Programme for Minimum Needs covering elementary education, drinking water, medical care in rural areas, nutrition, home-sites for the landless labour, rural roads, rural electrification and slum improvement and clearance; (d) extended programmes of social welfare; (e) emphasis on agriculture, key and basic industries and industries producing goods for mass consumption; (f) an adequate public procurement and distribution system for assured supply of essential consumption goods, at least to poorer sections, at reasonably stable prices; (g) vigorous export promotion and import substitution; (h) rigorous restraint on unessential consumption; (i) an equitable prices-wages income balance and (j) institutional, fiscal and other measures for reduction of social, economic and regional inequalities.

The Fifth Plan provides for a 5.5 per cent average annual rate of growth. The sectoral pattern of growth for the Fifth Plan period envisages that an average rate of growth of 3.97 per cent must be targetted in terms

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of value added to the agricultural sector, 8.14 per cent in mining and manufacturing sectors, 10.31 per cent for electricity, 8.13 per cent for construction, 5.58 per cent for transport and 5.66 per cent for services.

The projected estimates of output indicate that as against the 1973-74 targets, the expectation for 1978-79 should be as follows : 115 million tonnes (1973-74) and 139.9 million tonnes (1978-79) for foodgrains; 80 million tonnes and 141.2 million tonnes for coal; 42 million tonnes and 66.5 million tonnes for iron ore; 7.70 million tonnes and 7.77 million tonnes for crude oil; 4.3 million tonnes and 5.88 million tonnes for sugar; 475 million kg. and 642.3 million kg. for cotton yarn for sale; 8500 million metres and 10703 million metres for cotton cloth; 1200 million metres and 1513 million metres for art silk fabrics; 17 million metres and 24.2 million metres for woollen fabrics; 1.3 million tonnes and 1.64 million tonnes for jute manufactures; 850,000 tonnes and 1.57 million tonnes for paper and paperboard; 65,000 tonnes and 159,300 tonnes for newsprint; 1.6 million tonnes and 3.9 million tonnes for nirtogenous fertilizers; 450,000 tonnes and 1.17 million tonnes for phosphatic fertilizers; 1.5 million tonnes and 3.35 million tonnes for sulphuric acid; 20.5 million tonnes and 34 million tonnes for petroleum products (crude throughput); 18 million tonnes and 26.8 million tonnes for cement; 5.8 million tonnes and 9.4 million tonnes for mild steel; 2 million tonnes and 3.8 million tonnes for pig iron for sale; 350,000 tonnes and 518,000 tonnes for alloy and special steel; 210,000 tonnes and 425,000 tonnes for aluminium ingots; 3.45 million H.P. and 5.65 million H.P. for electric motors; 3.25 million numbers and 3.85 million numbers for radios; 1.58 million numbers and 2.19 million numbers for watches and clocks; 78 billion Kwh and 129 billion kwh for electricity generation and 62.4 billion kwh and 106 billion kwh for electricity consumption. ☐

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FOREIGN EXCHANGE FROM MARINE PRODUCTS

If new categories of manufacture are sizeably contributing to India's consistent export uptrend, traditional lines of overseas supply continue to constitute the bulk of export earnings. The group of marine products is an example of such traditional products which are faring admirably, particularly in the recent years. The country's export trade in marine products totalled Rs. 413.88 million in 1971-72 as against Rs. 305.37 million in 1970-71. In the first half of 1972-73, the value was in the neighbourhood of Rs. 282.40 million in comparison with Rs. 153.52 million in the corresponding period of 1971-72.

The Kerala State in India accounts for more than 85 per cent of the total marine product exports of the country. Nearly 600 kilometres long maritime coast and about 2.5 million hectares of fishable waters are endowed to Kerala which can be well stated as the home of modern sea food industry in this part of the world. Of the various established exporters of marine products in the State, M/s. Indo-Marine Agencies (Kerala) Private Limited, P.B. 151, Cochin-2 is one of the foremost. From the stage of a small canning factory with an initial capacity of 5000 cans per 8 hours shift, the firm's present canning capacity is 245,000 cans (with initial capacity of 5000 cans per 8 hour shift (1958). The freezing capacity of the firm witnessed rapid improvement over the years; the State's total cold storage capacity is of the order of 250 tonnes now.

The erstwhile recipient of the national award for outstanding export performance for excellence in export turnover, marketing competence and maintenance of high quality of goods, the Cochin firm improved its export earning from strength to strength. In 1961, their exports totalled Rs. 4 million. During 1970-71, they rose to Rs. 19.5 million. Quantitywise, they exported 1.18 million lbs of frozen shrimps, 3.4 million tonnes of canned shrimps and 0 7 million lbs of froglegs during 1970-71. In 1971-72, the firm's export performance somewhat declined to the level of Rs. 13.4 million but they hope to not only set off this shortfall but hit new records in the years to come. They expect that once their Madras factory is commissioned, their export earnings would reach the level of Rs. 35 to Rs. 40 million by the end of 1974.

With the established reputation as the quality exporter to sophisticated countries such as U.S.A., Japan, Australia, France, Switzerland, U.K., Belgium and Federal Republic of Germany, the marine product firm was the first exporter of frozen sea foods from the Madras port. Their products, marketed under the brand names of "Bay Pride" and "Sea Prince", have gained consumer acceptance the world over. "Bay Pride" brand is particularly popular in the U.S.A. and Canadian markets.

In view of the vast fish resources available in the unexplored eastern coast of India, a sister firm of this company was started at Madras in 1968. They are now setting up a new freezing-cum-cold storage and ice plant consisting of 100 tonnes of frozen storage, 50 tonnes of cold storage and 10 tonnes of ice plant with a freezing capacity of 5 tonnes per day. With the commissioning of the Madras plant in the near future, the company's total installed freezing capacity at Cochin, Mangalore and Madras would be 20 tonnes, cold storage 300 tonnes, frozen storage 100 tonnes and a facility to produce 100 tonnes of ice per day.

In view of the demand trend abroad, the firm succeeded in introducing consumer packs of froglegs. They are now poised to introduce consumer packs of other products such as frozen shrimps also.

CAR RADIOS TO U. K.

India made telecommunication apparatus are today, sought by a large number of countries, particularly the developing ones in sizeable numbers. During 1971-72, a wide range of items in the group of telecommunication apparatus brought in foreign exchange to the tune of Rs. 29.92 million as compared to Rs. 27 million in 1970-71. During the first half of 1972-73 (April-September 72), the category fetched Rs. 15.33 million.

During the first half of 1972-73, radio broadcast receivers constituted the major area of export dynamism in this group having earned Rs. 11.66 million. Of this, the share of transistor radio receiver sets alone accounted for Rs. 5.47 million. Quantumwise, in all, 63,510 sets were supplied abroad. Sudan was the topmost buyer. It absorbed 27,717 numbers valued at over Rs. 2 million. UK was the next important buyer which imported 22,505 numbers at Rs. 1.55 million. Ethiopia, Czechoslovakia, Dahomy Republic, Ireland, Bulgaria, Hong Kong and Iraq were among other buying countries.

Recently, a sizeable export order was bagged by M/s. Mohamed Ibrahim and Company Private Limited, a small scale unit in the line in South India for supply of 20,000 car radio sets to M/s. Pye Limited, United Kingdom. The South Indian firm expects to secure another big contract for 30,000 sets in kit form. They have been in the electronic field for over 45 years and claim to be in correspondence with Czechoslovakia for large supplies of car radios to that country. There are enquiries from Turkey also for a sizeable quantity of car radios in kit form.

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In the organised sector, the production of radio receivers by the 14 units engaged in the line was of the order of Rs. 311.32 million (1.97 million numbers) in 1971. During the year, the installed capacity was placed at 2.30 million numbers. In 1970, as against the installed capacity of 2.30 million numbers, the actual production of 14 units in the line was valued at Rs. 242.40 million (1.77 million numbers).

INDIAN HANDICRAFTS POPULAR ABROAD

Simultaneously with the achievement being made in the export of non-traditional manufactured products such as engineering goods, chemicals and plastics, the Indian exporters continue to harness the traditional sector like handicrafts and handlooms to add to the foreign exchange earning of the country. During 1971-72, the export earning of handicraft artwares alone was about Rs. 100 million. The items exported in the group included artwares of rose wood, walnut wood and other wood, ivory and horn artwares, papier mache and bidri artware, artwares of copper, brass and zinc, dolls and toys, pottery artware and silk, wool and leather goods as artware.

M/s. Hiralal & Sons, 20, East Park Area, Karol Bagh, New Delhi-5, one of the exporters for handicrafts and handlooms succeeded in increasing their exports from mere Rs. 0.17 million in 1957-58 to Rs. 1.55 million in 1966-67. The export earning of the firm has since been considerably growing from year to year—Rs. 2.2 million in 1967-68, Rs. 2.69 million in 1969-70, Rs. 3.3 million in 1970-71 and Rs. 3.6 million in 1971-72. During 1972-73, their exports are estimated to have reached a high level of Rs. 6.5 million. The firm has placed its export target for 1973-74 at Rs. 10 million. The export range of the firm includes brass art wares, ivory carvings, shisham wood, rose wood, walnut wood, sandal wood, zari goods, horn artware, paintings, immitation jewellery, semi-precious stones, paper machie goods etc. Their products are sought for far and wide including countries like Australia, Austria, Bulgaria, Hungary, Czechoslovakia, Denmark, France, Federal Republic of Germany, German Democratic Republic, Ireland, Italy, Netherlands, Poland, Spain, Switzerland, U.K., U.S.A., Canada, U.S.S.R., Yugoslavia, West Indies, the Carribean Islands and Japan. Recently, the firm received "National Award" from the All India Handicrafts Board, New Delhi for their outstanding export performance in art metalwares during 1971-72. They also figure in the list of recognised export houses in the country.

TEXTILE YARN AND CLOTH ON EXPORT FRONT

India's foreign exchange earning from overseas supply of textile yarn and thread, and cotton manufactures (excluding yarn, thread and clothing) amounted to Rs. 1280.80 million in 1971-72. Of this, the share of textile yarn and thread was of the order of Rs. 280.35 million while cotton manufactures accounted for Rs. 1000.50 million. During the first six months of 1972-73 (April-September, 1972), the exports fetched Rs. 741.20 million in foreign exchange. Of this, textile yarn and thread brought in Rs. 178.33 million and the earning of cotton manufactures amounted to Rs. 562.67 million.

In 1971-72, Czechoslovakia, U.K., Belgium, Sri Lanka, Arab Republic of Egypt, Yugoslavia, Burma, Nepal, Ethiopia, Nigeria, Japan, Kenya, Singapore, Sudan and Afghanistan were the major markets for textile yarn and thread while U.S.A., U.K., U.S.S.R., Australia, France, Federal Republic of Germany, Canada, Nepal, Sudan, Nigeria, Kenya, Denmark, Zambia, Sweden, New Zealand, Rumania, Singapore and Japan were the prominent destinations for cotton manufactures.

Adding to the export effort of the industry, M/s. Mysore Spinning and Manufacturing Company, Temple Bar Building, 70, Forbes Street, Fort, Bombay, one of the firms engaged in the line, secured export orders to the tune of over Rs. 4 million for the supply of textile yarn and cloth during 1971-72. In fact, the firm was able to execute 50 per cent of these orders in the same year. The firm's sales during the first six months of 1972-73 amounted to Rs. 8.2 million in respect of cloth and Rs. 3.3 million for yarn.

In 1971, India's total production of cotton cloth was of the order of 7356 million metres while that of cotton yarn stood at 881 million kg. In the same year the contribution of spinning and composite mills in the total cotton yarn production was 269.37 million kg. (30.6 per cent) and 611.62 million kg. (69.5 per cent) as against 28.72 million kg. (29.1 per cent) and 67.76 million kg. (70.2 per cent) in 1970. As on January 1, 1972, country's cotton textile industry comprised of 18.11 million spindles and 208,000 looms installed and 379 spinning and 291 composite mills.

TYRES AND TUBES AND EXPORT TRADE

India manufactured tyres and tubes are in demand not only in a number of developing countries but also in highly developed markets like U.S.A., U.S.S.R. and Yugoslavia. A consistent increase in exports has been witnessed by these products in the recent years. In 1971-72, these items earned foreign exchange equivalent to Rs. 70 million. In fact, the exports rose to this level from Rs. 41 million in 1969-70 and Rs. 55 million in 1970-71. During the first half of 1972-73 (April-September 1972), the exports amounted to Rs. 44.18 million.

Varietywise, the break up of exports in 1971-72 was : tyres of trucks and buses Rs. 43.30 million (over 61 per cent of the total value); tyres for off the road vehicles Rs. 8.30 million; cycle tyres Rs. 3.88 million; motor tyres Rs. 3.07 million; tyres for other vehicles Rs. 1.43 million; tractor tyres Rs. 0.87 million and motor cycle tyres Rs. 0.12 million. Besides, tubes for various types of vehicles were also active in the export trade during the year. The export value was: tubes for trucks and tubes Rs. 4.5 million; cycle tubes Rs. 2.25 million and tubes for motor cycles Rs. 0.60 million. Tubes for motor and tractor tubes were the other varieties active in the export trade.

Yugoslavia, Czechoslovakia, U.S.S.R., Sudan, Burma, Kuwait, Hungary, U.S.A., Korea Republic, Afghanistan, Indonesia and Nigeria were the prominent destinations for tyres while Yugoslavia, U.S.S.R., U.S.A., Sudan, Czechoslovakia, Korea Republic, Ghana, Singapore, Nigeria, Rumania, Indonesia, Afghanistan and Iraq were the leading markets for tubes.

Adding to the export effort of the sector engaged in the manufacture of tyres and tubes, M/s. Madras Rubber Factory, Dhun Building, 175/1, Mount Road, Madras-2, were able to export to the tune of Rs. 9.06 million during the year ending September 1972. The firm succeeded in exporting more than 10 per cent of their total production. Their exports are directed even to a sophisticated market like the U.S.A.

The Madras firm have stepped up their installed capacity from 360,000 numbers to 610,000 numbers in respect of automobile tyres and tubes. Their plant in Goa is expected to go on production stream this year. The company's plant at Arkonam for bicycle tyres is also completed and expected to commence production shortly. The expansion programme of the Madras plant has been completed facilitating the exports effected by the firm during 1971-72.

EXPORT PERFORMANCE AND POTENTIAL

TREND IN INDIA'S FOREIGN TRADE

India's exports during the first nine months of 1972-73 (April-December 1972) at Rs. 13,950 million were higher by about 22 per cent as compared to those of the corresponding period in the previous year. Interestingly, the imports during this period at Rs. 12,310 million showed a decline of about 10 per cent. Consequently, the country had a balance of trade favourable to the extent of Rs. 1640 million as compared to unfavourable balance of Rs. 2240 million in the corresponding period of 1971-72.

Even if this rate of export growth is not maintained during the remaining three months of the year, it is expected that the growth rate during the year would be considerably more than the achievements in the export field during the preceding three years and also the target of 7 per cent. It is also expected that the final export figures for the entire year of 1972-73 will reach the target of exports set at Rs. 17,600 million for the year.

The commoditywise details of exports for the first six months of 1972-73 showed an increase in items like leather and leather manufactures, cotton textiles, diamonds, fish, tobacco, oil-cakes, cashew kernels, cereals and cereal preparations. The exports of sugar, iron ore, iron and steel, however, suffered a set back.

Regionwise, during April-September 1972, exports to West Europe increased by nearly Rs. 640 million, to East Europe by over Rs. 570 million, to Asia and Oceania by Rs. 390 million and to America by Rs. 70 million, as compared with the corresponding period of the preceding year. The increase in exports to Asia was mainly due to increased trade with Bangladesh and increase in exports to Japan, Nepal and Iran.

Total imports during the first nine months of the year 1972-73 were of the order of Rs. 12,310 million. Commoditywise, the first five months of the year indicated an increase in the export of machinery and transport equipment. There was a decline in most of the other sectors. This was particularly marked in foodgrains and cotton. In view of the provision of larger allocation for steel, fertilizers etc., imports of these categories are expected to be higher in the remaining period of the year.

During the period under review, India's imports from West Europe increased by Rs. 384 million. Imports from Africa and Asia were also higher than in the corresponding period of the previous year. Imports from America and East Europe registered a decline over the corresponding period of last year.

The trade policy in the year continued to be export-oriented with special emphasis on maximising production for exports and encouraging import substitution. The import policy aimed at ensuring adequate supplies of imported inputs for expansion and diversification of export production. Several measures, including financial assistance and incentives and streamlining of institutional arrangements, were adopted to diversify and expand exports.

Thr decision of the Government of India to set up an export processing zone for electronic equipments and components near Santa Cruz in Bombay, is intended to enable substantial increase in the export of these items in the coming years. The industries in the zone will be entirely export-oriented.

The share of public sector in the import trade has progressively increased and about three-fourths of the total imports was through public sector agencies. In respect of exports, the share of public sector was up to one-fifth of the total exports. The State Trading Corporation of India has set up a joint venture, 'STC Far East', with some leading trading houses in Hong Kong for diversification of exports. To develop the growth of marine products industry with special emphasis on exports, a statutory body, Marine Products Export Development Authority was established at Cochin in August, 1972. It has also been decided to set up a Tobacco Marketing Board to provide a continuing institutional framework for systematic development of production and marketing of flue-cured tobacco. Similarly a decision to set up a National Textile Corporation was also taken. The Government also decided to allow imports of sophisticated machinery to the exporting textile mills against export obligations to enable them to modernise and improve their competitiveness in overseas markets.

EXPORTS OF WOOLLEN PRODUCTS UP

The first 10 months of 1972-73 (April 72-January 73) witnessed a sizeable growth in India's export earning of woollen products. Valued at over Rs. 400 million, the exports value improved by over 36 per cent compared to that (Rs. 293 million) in the same period in 1971-72. The exports during the period under review, in fact, would be more, as the exports indicated relate to only 4 major ports of Bombay Calcutta, Madras and Jamnagar whereas the figure for 1971-72 (ten months) relates to all the ports in the country.

Carpets, druggets and numdahs constituted the major area of export growth which brought in Rs. 176 million compared to Rs. 107.08 million. The increase was due to larger offtake by the three major importing destinations, namely, Federal Republic of Germany (Rs. 69 million against Rs. 33.60 million), U.S.A. (Rs. 42.83 million against Rs. 27.24 million) and U.K. (Rs. 19 81 million against Rs. 12.76 million). Canada, Australia, Netherlands and Belgium were prominent among other buyers.

Woollen hosiery exports also witnessed uptrend at Rs. 147.20 million outstripping even the previous year's target (Rs. 120 million). U.S S.R. retained its position of the topmost buyer having improved its offtake at Rs. 115.44 million against Rs. 91 million. Poland emerged as the second destination which absorbed worth Rs. 14 34 million replacing Czechoslovakia which purchased worth Rs. 8.68 million, followed by Libya at Rs. 3.38 million.

Fetching Rs. 42.53 million, the category of raw wool improved its foreign exchange earning as against Rs. 29.79 million (April 71 - January 72). U.K. emerged as the leading market, having imported worth Rs. 25.45 million, replacing U.S.S.R. which purchased worth Rs. 11.39 million.

The export value of other categories which looked up during the period under review of 1972-73 compared to the previous year were : Woollen blankets (Rs. 3.24 million against Rs, 1.74 million); shawls and lohis (Rs. 2.5 million against Rs. 0.84 million) and shoddy wool, wool tops, worsted yarn/knitting wool which registered only marginal improvement.

Woollen readymade garments and woollen worsted and mixed fabrics were, however, the two categories which registered decline in exports. The export value of the readymade garments was less at Rs. 12.79 million against Rs. 17.39 million, mainly due to curtailed intake by U.S.S R. Overseas supply of the fabrics decreased to Rs. 15.74 million from Rs. 19.67 million. Reduced purchases by Hong Kong, Hungary U.S.S.R. and Singapore contributed to the decline.

BOOST IN CLOTHING EXPORTS

India's exports of clothing (except fur clothing) during the first 6 months of 1972-73 (April-September 72) reached a level of Rs. 279 million as against Rs. 164.20 million in the same period of the preceding year, registering a sharp increase of about Rs. 115 million (over 70 per cent).

Clothing of textile fabrics (not knitted or crocheted) constituted the major area of sizeable export growth, having secured foreign exchange to the tune of Rs. 149.76 million. Among a wide range of varieties exported in the category, cotton outer garments for men and boys was the leading variety which earned nearly Rs. 50 million. U.S S.R. topped the list of buyers, having imported worth Rs. 18.65 million, followed by sweden at Rs. 6.77 million, U.S.A. at Rs. 5.57 million, U.K. at R. 4.85 million, France at Rs. 3.50 million and Federal Republic of Germany at Rs. 2.61 million. Denmark, Italy, Netherlands and Australia were the other prominent buying countries.

Fetching Rs. 47.81 million, cotton dresses for girls proved its significance next to cotton outer garments for men. Sweden was the leading market having absorbed worth Rs. 11.44 million. Federal Republic of Germany was the next best buyer at Rs. 8.50 million, followed by U.S.A. at over Rs. 6 million, U.K. at Rs. 4.10 million, France at Rs. 3.22 million and Denmark at Rs. 2.75 million.

Outer garments for men, women, boys and girls made from synthetic fibres, wool, silk and other fabrics were also active in the export trade.

Clothing and accessories (knitted or crocheted), the second important category netted as much as Rs. 110.20 million. Wool sweaters and cardigans constituted the largest single variety, the offtake of which amounted to Rs. 105.84 million, absorbing the major share of the entire export value of the category. U.S.S.R. alone imported worth Rs. 83.77 million. Czechoslovakia with an intake worth Rs. 7.81 occupied the second position, followed by Poland at Rs. 7.74 million, Libya at Rs. 3.20 million and Hungary at Rs. 1.07 million. Cotton gloves, wool stockings, cotton T shirts in white, cotton gengis, cotton under garments, cotton outer garments, wool outer garments, other textile fibre outer garments and wool under garments were the other varieties active in exports.

Textile fabrics clothing accessories (not knitted) was yet one more category active in the line having secured Rs. 17.60 million. Silk shawls and scarves variety earned Rs. 5.86 million while handkerchiefs netted Rs. 5.22 million. Ties and bow ties brought in Rs. 1.27 million and handprinted cotton chadars and odhanis fetched Rs. 1.22 million. Federal Republic of Germany and France were the major importing countries for silk shawls and scraves while U.S.S.R., U.K. and Federal Republic of Germany were the leading markets for handkerchiefs. Federal Republic of Germany and U.S.A. were the prominent purchasers of ties and bow ties and Ethiopia, Dubai, Yemen Arab Republic and Somalia were the main absorbing countries for cotton chadars and odhanis. Besides, cotton shawls and scarves, zari embriodered silk shawls, wool shawls, wool scarves, cotton brassiers, collars and cuffs, gloves, socks (not knitted), cotton and wool clothing accessories were the other items supplied abroad in this category. Leather apparel and clothing accessories, headgears, and furskin articles were the other categories exported in the line.

TRAVEL GOODS EARN MORE

India manufactured travel goods are emerging as a promising area of sizeable export growth among non-traditional export items. In the first half of 1972-73 (April '72-September'72), India's exports of travel goods registered nearly four fold increase at Rs. 11.60 million over the export earning at Rs. 3.35 million during the corresponding period of the previous year. The exports during the first 6 months of 1972-73 even outstripped the exports in the line during the entire year of 1971-72 which were of the order of Rs. 8.65 million.

During the period under review of 1972-73, handbags, wallets etc. (excluding artware leather) constituted the largest single category of export earning having secured Rs. 8.40 million, accounting for over 72 per cent of the total value. In the entire year of 1971-72, the export value was Rs. 2.92 million. Japan retained its position as the topmost buyer at Rs. 6.80 million, absorbing the bulk of the supply in the line and surpassing its intake at Rs. 2.15 million during the entire year of 1971-72. U.S.A., Canada, U.K. and Federal Republic of Germany were prominent among other buyers.

The export earning of other categories in the line was : vulcanised fibre handbags (excluding artware) nearly Rs. 1 million and other vulcanised rubber travel goods Rs. 0.82 million. Travel goods of leather fetched Rs. 0.84 million while other travel goods of leather earned Rs. 0.52 million. Japan, Sierra Leone, U.S.A., Federal Republic of Germany, Italy, Netherlands, Tanzania Republic and U.K. were the prominent destinations for these items.

INDUSTRIAL DEVELOPMENT, DIVERSIFICATION AND POLICY

IMPORT POLICY FOR 1973-74

The import policy for the year 1973-74, announced recently, envisages a dominant role for the public sector in import trade, creation of opportunities for generating more employment, special facilities for small scale industries, facilities for research and development, employment of the scheme of compulsory export obligation, a higher entitlement for import of machinery against replenishment licences and benefits to indigenous producers supplying raw materials to exporters at international prices.

In line with the Government policy to bring more and more items under the purview of public sector agencies, 20 additional items have been canalised for import, taking their total to 202 from 182 items. The items added to the list of canalised commodities are : copper pipes and tubes, including capillary tubing; Bronze alloy wires; antimony metal; nickel alloy sheets; ampicillin trihydrate/anhydrous/sodium; fursemide; methyl dopa; nitrofuratoin; prenylamine lactate; sulphamethoxy pyridazine; indomethacin; phthayl sulphathiazole; vitamin B 6; calcium/sodium pentothenates; panthenols; L-Base (Aminodiol); turbine oil; styrene; raw petroleum coke and ships and vessels for breaking up purposes. In addition to normal imports, the State Trading Corporation of India has been allowed to import books for libraries and other educational institutions. The Corporation will also be organising bulk imports of certain raw materials for sale to actual users and registered exporters. The Industrial Raw Materials Assistance Centre (IRMAC), set up by the State Trading Corporation, will further expand its activities for supplying raw materials 'off-the shelf'. The "Steel Bank" set up by the Hindustan Steel Limited will organise bulk imports of steel for meeting the requirements of actual users. This will enable the priority users to obtain supplies ex-stock against their valid import licences. Registered exporters will continue to be allowed to transfer their import replenishment licences in favour of the S.T.C./M.M.T.C.

In view of the growing value and quality of indigenous production 220 items have been removed from the list of permissible imports. These include certain types of ball bearings, taper roller bearings, machine tool, machinery and accessories, instruments, dyes and dyes intermediates, drugs and chemicals. In addition 55 items, including certain types of ball bearings, drugs, medicines, chemicals and dyes intermediates which were hitherto allowed to be imported freely by actual users, will now be permitted for import only on a restricted basis. Another 26 items have been marked for reduced imports. These include spare parts of various equipments, drugs and medicines, motor vehicles, parts and instruments.

The number of industries on the priority list for allocation of imported raw materials, components and spares has been increased from 59 to 70. The additional 11 priority industries are hosiery needles, road rollers, polystyrene, steel wires, wheel discs, bogie wheel and crawler traction tracks, industrial chains, polyethylene, low density and high density, P.V.C. resins, diesel locomotives (different gauges), industrials alcohols and synthetic detergents.

The new facilities extended under the Import Policy to the small scale industries include greater allocation of raw materials to small scale units engaged in industries exclusively reserved for small sector. These units will be granted import licences for a value of 20 per cent higher than the previous years. The basis of import licensing for new units in the small scale sector has been liberalised. The entitlement of such units in respect of imported raw materials, components and spares will be determined at the rate of 40 per cent of the value of the machinery as against 30 per cent hitherto and by raising the maximum admissible value from Rs. 75,000/- to Rs. 1,00,000 per annum for non-priority industries and from Rs. 150,000 to Rs. 200,000 per annum for priority industries.

Consistent with the policy of compulsory exports, large scale units engaged in certain non-priority industries have been brought under the purview of the scheme of compulsory export. These industries pertain to radio receivers, cosmetics and toiletries (talcum powder, face powder, face cream and hair dyes), playing cards, spectacle frames and vacuum flasks. Even in the case of priority industries on which compulsory export obligation is imposed, a study is being made to identify more units for such obligation. The question of applying a bigger cut on defaulting units will also be considered for the future.

While industrial units in the priority sector exporting 10 per cent or more of their production, will continue to be eligible for preferred sources of supply and facilities for expansion of export production, units which export 25 per cent or more of their production will receive substantially greater preference. Units in the non-priority sector having similar export performance will be treated as priority units, given the same preference in regard to the sources of supply and for expansion of production, and receive all the facilities normally given to priority units.

Even in the case of small scale industries special facilities have been provided for exporting units. In this sector, units exporting 10 per cent or more of their production will be granted additional facilities if their export during 1972-73 are twice the value of their exports during 1971-72. These additional facilities include a substantially greater preference in the source of supply of imported inputs and import of restricted items for an increased percentage as compared to other units, to enable them to improve the quality of their products for export. These units will also be allowed to set up consortia of their own to organise sales of their products abroad. These consortia will be recognised as export house and will thus be given import facilities subject to certain conditions. In case of Export Development Corporations of State Governments, the condition of minimum export performance of Rs. 2.5 million for the purpose of registration as an eligible export house has been waived. Though eligible export houses will continue to have the facilities for the import of raw materials and components to meet the requirements of their supporting manufacturers, the facility of accepting indirect exports for the purpose of granting eligibility certificates to export houses has been withdrawn.

In the case of registered exporters, supplies of indigenous materials at international prices to exporters will be treated as exports for all purposes under the import policy. Further, manufacturer-exporters who double their exports will be given greater facilities in the matter of raw material imports. The procedure for allowing nominations by registered exporters has been further rationalised. A liberal provision has been made for import of machinery, testing equipment and jigs and tools against export entitlement.

The other salient features of the new policy include facilities for import of equipment and raw materials required for research and development, provision for higher import of spare parts for maintenance of equipment and increased production, import of steel for export production, preferential treatment for import of machinery and raw material to small scale units in developing areas, rationalisation and simplification of licensing procedures.

TRENDS IN COTTON PRODUCTION

In the current cotton year ending August 1973, India's cotton production is estimated to be at 6.2 million bales of 180 kg. each. The brought conditions in some of the cotton growing areas of the country affected the cotton production which was 6.8 million bales in the preceding cotton year. The quality of cotton, however, is reported to be better than that of the last season. The production of long staple cotton is expected to be 0.5 million bales more than during the last season. The import bill on account of raw cotton imports is likely to be 0.55 million bales in 1972-73 as against 0.63 million bales in 1971-72, 0.84 million bales in 1970-71 and 0.94 million bales in 1969-70.

In view of the continued necessity for importing long staple variety, the Government of India have devised certain steps such as developing the indigenous production of extra long staple varieties like "sujata" and "suvin", development of long staple and high yielding varieties of cotton like MCU 5 and evolution of short-duration and compact-habit strains. The measures devised by Government also include development of efficient mixed cropping and inter-cropping system as well as integrated disease and pest control schedules. Steps are also being taken to improve pest-harvest technology.

An Intensive Cotton Development Scheme involving an expenditure of about Rs. 150 million is under way (1971-72 to 1973-74) aiming at quicker development of cotton production. Under the Scheme, six districts have been covered in the irrigated areas and approximately 140,000 hectares spread over different states have been covered in non-irrigated areas. It is expected that during 1971-72 to 1973-74, the Scheme will yield an additional 360,000 bales in 1971-72 and 1972-73 each and 480,000 bales in 1973-74.

In the cotton year 1971-72, India's cotton crop was exceptionally good. The good crop coupled with disturbed political conditions arising out of the outbreak of hostilities with Pakistan resulted in sudden decline in cotton prices. A policy of procurement prices was announced and Cotton Corporation was authorised to purchase stocks. By the end of August 1972, the Corporation purchased 515,000 bales of cotton valued at about Rs. 580 million. The Corporation's purchases have indeed helped to stabilise the cotton prices.

Since September 1972, the Corporation has been left with the discretion of entering the domestic market as a commercial proposition and it has not been called upon to make purchases at any fixed price. In the current cotton season (September 1972-August 1973), the Corporation, however, purchased 320,000 bales of cotton till the end of February 1973.

The decline in cotton production during the current cotton year has been estimated to be of the order of 6 per cent in comparision with that in the preceding year. The import of 410,000 bales costing about Rs. 560 million and 140,000 bales of about Rs. 380 million from Sudan and Arab Republic of Egypt respectively has been arranged under bi-lateral trade agreements with those countries.

CONTINUOUS PROCESS POLYESTER STAPLE FIBRE PLANT

India's first continuous process polyester staple fibre plant, was recently commissioned at Ghaziabad. The plant will produce polyester staple fibre to be commercially available in the country under the brand name "Jailene".

The continuous process employed in the plant has the advantage of ensuring uniformity in the quality of the fibre to a fine degree which is impossible to get in the conventional batch process.

The plant has presently started production of 1.5 finer denier fibre and shall be manufacturing 1.2 denier high tenacity fibre. Currently, the country's requirements of 1.2 denier high tenacity fibre are met mostly through imports. The plant has been set up by M/s. Swadeshi Polytex Ltd. in collaboration with M/s. Zimmer AG, West Germany.

Presently, only one unit is engaged in the production of polyester fibre in the country in the organised sector. Against its installed capacity of 5000 tonnes, its production was estimated at 5730 tonnes, valued at nearly Rs. 119 million (1971). In 1970 with the same installed capacity, the unit produced 5332 tonnes valued at Rs. 111.4 million.

AIRPORT SURVEILLANCE RADAR COMMISSIONED

First airport surveillance radar was commissioned recently at Palam Airport, New Delhi. With a range of 60 nautical miles, the radar is capable of detecting aircraft flying at a height upto 37,000 feet. This would help the Air Traffic Controller to maintain continuous watch on the progress of flights and provide the pilot with information on deviation from aircraft control clearance. It will also guide aircraft to clear off other traffic and factors including adverse weather which can be a potential danger.

A special feature of the newly commissioned radar equipment is its capability to project electronically on the radarscope a map showing runways, important objects, restricted areas and position of other navigational aids at the airport. The data in the radarscope is updated every four seconds so as to enable the Air Traffic Control to keep track of the position of the fast moving jet aircraft.

The antenna with its reflector is mounted on a 30-foot tower near the transmitter building. The data is transmitted by means of underground cables to the operators' room near the control tower where display units are located.

Installed at a cost of about Rs. 8.2 million including civil and electrical works, the radar has a facility of radio telephone communication, dissemination of all messages regarding the entire aircraft operation and also recording of all conversion on the various communication channels.

PETROLEUM PRODUCTS AVAILABILITY

Total requirement of petroleum products during 1973 is estimated to be of the order of Rs. 19.7 million, according to the Ministry of Petroleum and Chemicals, Government of India. As much as 19.7 million tonnes of refined petroleum products would be available indigenously and an estimated 4.4 million tonnes would have to be imported during the year.

The share of the public sector refineries in the country's total production during 1973 was estimated at 62 per cent. It was proposed to suitably expand the public sector refinery capacity so that the total capacity in operation at the end of the Fifth Plan period (1978-79) may be about 42 million tonnes. The share of the public sector in this total is expected to be 80 per cent at that time.

The indigenous availability of crude oil during 1973 was expected at 7.35 million tonnes. It was estimated that 13.95 million tonnes of crude oil may have to be imported during the year.

MICA PAPER DEVELOPED

Mica paper, which is used exclusively for insulation of sophisticated electrical equipment has been recently developed by the Research and Development Organisation for the Electrical Industry, (RDOEI), Bhopal.

This important invention of the Organisation functioningunder the Government of India, is expected to save Rs. 10 million in foreign exchange per annum and further create an export potential of double the amount in about five years. The RDOEI has signed an agreement with a Bangalore firm for its commercial production.

RDOEI already has five patents to its credit during its short existence of a little over six years. It is also providing technical consultancy service to State industrial undertakings, both in the public and private sectors. The Organisation has more than 24 research schemes in hand costing over Rs. 6 million which are being worked out by nearly 25 scientists and engineers.

The latest achievement of the RDOEI is the development of an electronic equipment, known as the thyristor armature reverser, which is the kingpin of a reversible DC drive supplied from a uni-directional thyristor converter equipment. The use of thyristor converter equipment can eliminate 50 per cent of the rotating machinery of a drive system, thereby resulting in easy maintenance, efficiency, improved economy and reliability. Thyristor armature reverser is presently imported and its development by the RDOEI is the result of an order from Heavy Electricals, Bhopal. The thyristor converter equipment of 50 kw rating costs about 15 per cent less than its foreign counterpart.

ELECTRONIC COMPONENTS UNIT TO BE SET UP

The Government of India have decided to set up a Rs. 20 million electronic components unit in public sector under the Department of Science and Technology.

Expected to function within two years, the unit will produce ceramic capacitors for radio, television and other electronic equipment and high voltage ceramics used as insulators in ray transmitting and television tubes and high grade derrites for telecommunication and defence equipment.

In 1971, in the organised sector, India's total production of electronics and telecommunication items was of the order of Rs. 580.40 million as against Rs. 527.80 million in 1970.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PARTICLE BOARDS FROM AGRO-WASTES

A process for the production of particle boards from agro-wastes has recently been developed by the Regional Research Laboratory (RRL), Jorhat. Particle boards find extensive use in buildings for parallel roofs, furniture, automobile and bus body construction, sports goods, packing cases and variety of other uses.

At present, most of the factories now producing particle boards, use wood as the raw material. The wood after suitable processing is made into particle board/hard board using synthetic glue or resins as binders which makes the process costly. This process involves use of industrial wool, whose demand for industrial purposes is greatly increasing with the result that the availability of the same for particle board manufacture may become difficult.

The present demand for particle boards in the country is 60,000 tonnes per year which is likely to go upto 80,000 tonnes per year. The present installed capacity for particle boards in the country is 45,000 tonnes per year, but the actual production has been only around 15-22 per cent which is due to the high cost of synthetic resins which is an important ingredient in the existing processes for making particle boards.

In the process developed by RRL, agro-wastes like low grade wood, which are now mostly wasted, after suitable conditioning, are subjected to thermo-mechanical treatment, when boards having a modulus of rupture of 110-125Kg/CM^2 and a tensile strength (parallel to the plan of the board) of 75-100 Kg./CM^2 are obtained. No binder is used in this process.

The process has manifold advantages, namely, total elimination of synthetic binder, utilisation of agro-industrial wastes, completely water proof boards, low cost of production and simple operation due to dry process.

Main items of raw materials required in the process are agro-wastes and some chemicals which are easily available indigenously.

The major items of equipment required are chipper, elevator, screen, furnace, drier, mixer, compressor, hydraulic press, conveying equipment, weigher, pumps, blower, storage vessels, dust collectors and other miscellaneous equipment.

The plant can be economically set up in areas where large number of rice mills or wood saw mills are situated or in areas where low grade cheap country wood is available.

PRIMER FOR ALL STEEL STRUCTURE

A new process for the manufacture of red lead-red oxide primer using lower percentage of red lead, has been successfully developed by the Central Electro-Chemical Research Institute (CECRI), Karaikudi (Tamil Nadu). The newly developed primer is likely to substitute the conventional red lead primer.

Red lead-red oxide primer can find application for the production of all steel structure i.e., bridges, towers, tanks, rail-coaches exposed to the atmosphere.

At present, red lead primers are generally used for the production of all steel structures exposed to atmosphere. This, however, suffers from the drawback that this red lead primer has to be prepared from imported lead and the percentage of red lead in red lead oxide primer is fairly high (more than 30 per cent).

The new process developed by CECRI consists in mixing red lead and red oxide pigment in different ratios in double boiled linseed oil and grinding pigment and the vehicle with white spirit.

The process has been studied on laboratory scale. 5 litres of paints have been prepared in the laboratory using rotating jar mill.

Field trials with the red lead red oxide primer are made by the laboratory. The performance of this primer is reported to be satisfactory. The product obtained conforms to Indian Standard Specification I.S. No. 102.

The main raw materials required in the process are red lead, red oxides, double boiled linseed oil, white spirit and drier. All these are indigenously available.

Major items of plant and machinery required are : Three roller mill with jar; Ball mill; Heghmann Gauge; Stormer viscometer; Ford cup No. 3 or 4; Weight per gallon cup; Baking oven; Gardner bubble viscometer; Hardness tester; Adhesion tester; Thickness tester alcometer; Rough balance; S.S. Vessels and Mixing tank. All these items are available indigenously.

GROUNDNUTS FORTIFIED WITH AMINO ACIDS

Processed protein foods are usually expensive and beyond the reach of common man. Groundnut with its protein content of 25 to 27 per cent offers an excellent source of protien. However, consumption of large quantity of groundnut is undesirable, especially to the children owing to its high oil content (50-55 per cent) which may cause billiousness. Also as the groundnut protein is deficient in essential amino acids like lysine and methionine, it needs supplementation to effect improvement in its protein pattern.

In order to reduce the fat content of the nut without affecting its shape and to supplement the partially defatted nut with essential amino acids, Central Food Technological Research Institute (CFTRI), Mysores has recently developed a process for the production of low fat, high protein groundnut fortified with essential amino acids. The process also recovers 60-65 per cent edible groundnut oil in its pure state. It consists in conditioning of decuticled bold groundnut seeds to an optimum moisture and equilibrating. The conditioned seeds are pressed in a hydraulic press to remove a part of the oil. The partially defatted nuts are reconstituted into their original shape in a solution containing essential amino acids and/or salt and finally dried. Salting of the nut, if desired, takes places in an efficient manner in this process.

The work on this process has been carried out in the Laboratory on 5 kg. per batch scale. The main raw material required is decuticled, bold and unbroken groundnut seeds.

Major items of equipment required in the process are hydraulic press, through-flow drier with perforated trays, vibratory filter, grader, roasting equipment, blanching equipment with aspirator, filter press jacketted kettle, pumps and holding bins. All these are indigenously available.

AUTOMOBILE INDUSTRY

With consistent uptrend in production from year to year, coupled with high indigenous content and constant increase in the foreign exchange earning, India's automobile industry has carved a significant place for itself among the country's engineering industries.

Until 1953, the industry was purely in assembly operation. The production range of the industry, today, includes commercial vehicles, cars, jeeps, two wheelers and three wheelers and an upto-date range of ancillaries. Except for car industry, all other sectors in the line are categorised as key and priority ones. The type of vehicles turned out by the automobile industry cater to the diversified transport need of the country. The commercial vehicles are produced from 3¼ tons to 16 tons payload, of which the principal production is in the range of 7½ tons. The passenger cars cover 1000, 1100 and 1500 cc. capacities. There are also the variations of the basic model of passenger cars and jeeps into delivery vans and station wagons to meet the requirements of commercial applications.

Production of automobiles of all types, recorded constant increase during 1961-71 except in the recession period (1966-67 and 1967-68). The production of commercial vehicles improved from 24788 numbers in 1961 to 40588 numbers in 1970 and 40865 numbers in 1971; jeeps from 7904 numbers in 1961 to 9334 numbers in 1970 and 11053 numbers in 1971; scooters from 12817 numbers in 1961 to 58392 numbers in 1970 and 67212 numbers in 1971; three wheelers from 1267 numbers in 1961 to 4229 numbers in 1970 and 6146 numbers in 1971 and mopeds and scooterates from 2634 numbers in 1961 to 11687 numbers in 1970 and 14113 numbers in 1971. The production of motor cycles which increased from 8636 numbers in 1961 to 42968 numbers in 1970, however, suffered a set back at 39730 numbers in 1971.

There are at present 8 main vehicle manufacturers engaged in the production of vehicles like trucks, buses, jeeps cars and diesel engines for commercial vehicles. An equal number of units were producing two wheelers like scooters and motor cycles. Of these, three manufacturers are also producing three-wheeler auto-rikshaws. There is one manufacturer who is producing 50 cc. petrol engines. In view of the growing demand for automobiles, expansion of the existing units has been permitted and letters of intent for new entrepreneurs have also been issued.

The output of automobile ancillaries has also consistently increased over the the years. From Rs. 90 million in 1960-61 production reached a level of Rs. 1069 million in 1970-71. In addition, the value of production achieved by the small scale units is estimated to be around Rs. 200 to 250 million per annum.

Initially the industry turned out mainly pistons, fan belts, radiators rubber hoses, silencers and leaf springs. At present, well over 100 items are produced in the country. The contribution of the ancillaries industry to the main vehicle in the present pattern of make or purchase structure amounts to about 45-50 per cent of the value of the vehicle.

Many of the ancillaries have registered production uptrend in 1971 as compared to 1970. For instance, output of nozzless went up from 2.1 million numbers to 2.31 millions numbers, elements from 2.2 million numbers to 19.75 million numbers, delivery valves from 2.0 million numbers to 2.59 million numbers, filters (oil, air and fuel) from 526,000 numbers to 978,000 numbers, starter motors from 137,000 numbers to 205,000 numbers, wheels and rims from 630,000 numbers to 780,000 numbers, shock absorbers from 1.17 million numbers to 1.44 million numbers, spark plugs from 2 9 million numbers to 3.52 million numbers, brake assembly from 122,000 numbers to 196,000 numbers, ignition coils from 211,000 numbers to 300,000 numbers, voltoge regulators from 254,000 numbers to 275,000 numbers, distributors from 76,000 numbers to 90,000 numbers, brake drum assembly from 900 numbers to 10,400 numbers, pins from 117,500 numbers to 138,000 numbers, gears from 228,400 tonnes to 251,000 tonnes, steering gears from 29,500 numbers to 34,700 numbers, crankshafts from 9,230 numbers to 20,600 numbers, pistons from 1.75 million numbers to 1.81 million numbers, cylinder liners from 231,000 numbers to 282,000 numbers, engine valves from 3.85 million numbers to 4.53 million numbers, carburettors from 4137 numbers to 9500 numbers, fuel pumps from 10,400 numbers to 20,000 numbers and radiators, cores, caps, heat exchangers etc. from 105,300 numbers to 677,000 numbers. Production of hydraulic pumps which was started in October 1970 amounted to about 6000 numbers in 1971.

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Creditably, the efforts of the ancillary units and those of main manufacturers have progressively led to high indigenous content in Indian automobiles-varying from 90 to 98 - 99.5 per cent in some vehicles. The items imported for some type of vehicles are carburettors, magontos, and certain special bearings and fastners. In addition to components deep drawing steel sheets and special alloy steels are imported. Even imports in respect of these items over the next few years are expected to minimise in view of the constant efforts being made to meet these requirements indigenously.

In the overall foreign exchange earning of engineering sector, the contribution of automobile industry figures prominently. During the full year of 1971-72, total exports of the automobiles and parts were of the order of Rs. 119.80 million.

In the first half of 1972-73, the industry netted foreign exchange to the tune of Rs. 49.54 million as against Rs. 37.62 million during the corresponding period of the preceding year. Of this, buses (assembled or not) fetched Rs. 7.32 million; jeeps and landrover types of vehicles Rs. 6.99 million; new lorries and trucks (assembled) Rs. 3.76 million and break-down lorries Rs. 1.23 million. Arab Republic of Egypt (Rs. 2.06 million), Nepal, South Yemen People's Republic and Bahrein Islands were the leading buyers for buses while for jeeps and landrover types of vehicles Jordan was the leading buyer having imported worth Rs. 5.14 million, followed by Sri Lanka at Rs. 1.58 million. Arab Republic of Egypt (Rs. 3.76 million), Nigeria (Rs. 1.57 million) and Sudan (Rs. 1.28 million) were the prominent buyers of new lorries and trucks while Qatar, Nepal and Kuwait were the important buyers for breakdown lorries.

Among other items in this group, Chassis (engine mounted) earned Rs. 10.32 million. Sri Lanka was the prominent buyer at Rs. 3.34 million, followed by A.R.E. at Rs. 3.60 million, Yugoslavia at Rs. 1.57 million and Bangladesh Rs. 1.40 million. Motor vehicle initial equipment fetched Rs. 16.30 million. Arab Republic of Egypt, Nigeria, Sudan and Sri Lanka were the prominent buyers while motor vehicle replacement parts earned Rs. 8.69 million. Yugoslavia, Arab Republic of Egypt, Sri Lanka, Singapore and U.K. were the major purchasers.

Motorcycles, motorised cycles and parts, tractor parts, motor vehicle replacement parts etc. were the other items active in exports. ☐

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CYCLE KNOW-HOW TO TANZANIA

Besides making impressive strides in the physical xport of bicycles and parts, the Indian bicycle industry vhich ranks fifth in the world in production of bicycles s to-day in a position to undertake overseas supply of icycle know-how also. During 1972-72, the industry xported bicycles and parts at Rs. 73.15 million as gainst Rs. 70.80 million in the preceding year.

In the first six months of 1972-73, total value mounted to nearly Rs. 50 million. During the period, he major export destinations for the bicycles included ndonesia, Ethiopia, Nepal, U. S. A., Malawi, Arab epublic of Egypt and Republic of Tanzania in order f the supplies received by them. Indonesia, Iran, angladesh, Singapore, Thailand, U.K., Yugoslavia, elgium were among the major buyers for bicycle parts.

M/s. Atlas Cycle Industries Ltd., Sonepat, aryana, one of the leading manufacturers and exporters of bicycles, recently succeeded in concluding a echnical collaboration agreement with the National Develpoment Corporation (NDC) of Tanzania for the nanufacture of bicycles in that country. Under the agreement M/s. Atlas shall provide complete know-how to NDC's subsidiary bicycle company for the manufacture of complete components of Roadstar type of 'Eastern Star' bicycle. The plant to come up with Indian technical know-how will have an annual capacity of manufacturing 60,000 bicycles and is expected to go on production stream by mid–1974. The agreement was concluded after a three-man team of the Sonepat firm had visited Dar-es-Salaam in this connection on an invitation from NDC of Tanzania. This is, in fact, the second time that the Sonepat firm is lending technical know-how for the manufacture of bicycles in a foreign country. Earlier, the firm concluded an agreement with a leading motorcycle manufacturing firm of Tehran for the manufacture of 60,000 bicycles annually.

Alongside increasing exports, the bicycle industry in India has been registering growing production in the line. From 1.05 million numbers in 1961, the output rose to 2.30 million numbers in 1970. Currently, there are ten major units active in the production of complete bicycles. Their installed capacity is of the order of 3.33 million bicycles. In the same year, 31 units were engaged in production of bicycle parts with an estimated output value at Rs. 105 million.

The products intended for overseas supply are subjected to strict compulsory quality control to ensure that no substandard product is exported. All major bicycle units in the country are equipped with modern machines and automatic plants.

WIRE ROPES ACTIVE IN EXPORT TRADE

Besides meeting the home demand, the wire rope industry in India has achieved considerable success in the export field also. During 1971-72, the industry earned foreign exchange to the tune of Rs. 18.6 million. Of this, the share of black wire ropes made of iron or steel accounted for Rs. 10.72 million (4785 tonnes) while galvanised wires ropes earned Rs. 7.87 million (2605 tonnes). Bulgaria constituted the foremost consumer of black wire ropes at a value of Rs. 3.5 million. U.S.S.R., Yugoslavia and Malaysia were the other three important destinations with an intake worth Rs. 1.42 million and Rs. 1.2 million and Rs. 1.02 million, respectively. Singapore, Thailand, Hong Kong, Canada, Equador, Iraq, Kenya, Philippines and USA were among the other buyers.

Yugoslavia was the leading buyer for galvanised wire ropes having absorbed worth Rs. 3.9 million. USSR, which imported worth Rs. 1.2 million, was the next best destination. Hong Kong, Federal Republic of Germany, Korea Democratic Republic, Nigeria, Malaysia, Singapore, Thailand, Bulgaria, Burma and Bahrein Islands were the other export destinations.

M/s. Mohatta and Heckel Limited, Mustafa Building, Sir P. M. Road, Bombay-1, one of the firms engaged in the manufacture of wire ropes, wires and wire nails, secured export contracts valued at Rs. 2.6 million during the year ending September 1972. In fact, their exports rose to this level from Rs. 1.9 million in the preceding year, ending September, 1971.

Alongside increase in export, the Bombay firm succeeded in improving its production to 1826 tonnes in the year (ending September 1972) from 1523 tonnes in the previous year. The company have active plans to add three more stranding machines in their factory. Presently, these are being manufactured in Kolaba district, Maharashtra. They are also planning to import one sun and planetary type wires rope closing machine having capacity to close ropes upto 50 mm diameter.

The installed capacity of 36,240 tonnes (annual) of the wire rope industry in the country is shared by over the 9 units engaged in the line. During 1971, the production of the industry was estimated at 19,980 tonnes. valued at Rs. 80 million. Indigenous production of wire ropes is currently being used in mines upto depth of 350 metres. About 65 per cent raw materials used in the manufacture of wire ropes is available indigenously.

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LASSWARE IN EXPORT TRADE

India's glass industry has made rapid strides, both the field of production and exports during the last o decades. With the employment of sophisticated chniques of production, the items manufactured by e industry are steadily picking up in overseas markets.

From Rs. 13.2 million worth in 1969-70, the ports of glass and glassware improved to Rs. 17.5 illion in 1970-71. During 1971-72, the offtake was orth Rs. 8.38 million for glassware and Rs. 6.10 illion for glass. In the first six months of 1972-73, e export supplies fetched Rs. 11.30 million (including s. 6.44 million for glass and Rs. 4.86 million for assware) as against Rs. 7.11 million in the same eriod of the preceding year.

The exports in the glassware category encompass wide range including constituted bottles and phials, ass inners for vacuum flasks, glass tableware and her articles, laboratory glassware, glass tubes, microope slides, glass bangles, beads, imitation pearls, nitation precious and semi-precious stones, fancy or ecorative glass smallwares and other articles of glass. fghanistan, Iraq, Arab Republic of Egypt, Bangladesh, ustralia, U.S.A., Nepal, Poland, U.S.S.R., Yemen rab Republic were among the major importers for ese items.

M/s. Alembic Glass Industries Ltd., Alembic Road, dustrial Area, Boarda-3, who have a fully automatic lass plant and are one of the firms in the line, have ecently secured orders valued at about Rs. 570,000 r supply of Alembic Glasswares to Jeddah, Saudi rabia. This is significant considering that till lately audi Arabian market was dominated by highly sophiscated glassware from Europe. The orders are xpected to be executed by July 1973 and may be llowed by larger orders from that country.

In 1971 there are 48 units in the country, engaged glass and glassware manufacture with an annual ombined capacity of 429,000 tonnes. Actual producon during 1971 is estimated at 290,000 tonnes valued t Rs. 370 million compared to 260,000 tonnes valued t Rs. 344 million during 1970.

INDUSTRIAL MACHINERY TO WORLD MARKETS

India has developed a sound base to manufacture a wide range of industrial machinery using modern technical expertise and competence. It has now emerged as a dependable supplier of a broad spectrum of machinery required for the production of a large number of consumer and industrial goods. The growing demand for India–manufactured industrial machinery in world markets is a proof of the production capability and marketing efficiency of the industry. During 1971-72, textile machinery earned Rs. 49 million; agricultural machinery and implements Rs. 3.7 million; tea machinery over Rs. 2.6 million; rice, pulses and flour mill machinery Rs. 1 million; oil mill machinery Rs. 3.5 million; cement machinery Rs. 3.4 million; asbestos machinery over Rs. 1.15 million; office machines Rs. 21.5 million; power generating machinery (other than electric) Rs. 55.22 million and sugar mill machinery Rs. 11 million.

M/s. Walchandnagar Industries Limited, Construction House, Ballard Estate, Bombay-1, one of the firms engaged in the line, succeeded in exporting industrial machinery worth Rs. 12.8 million during the year ending September, 1972. Besides physical exports, the firm undertakes turn-key assignments for erecting plants abroad. Currently, they are progressing with the erection of Kinyals Sugar Plant in Uganda. In November 1972, they secured another big export contract, valued at Rs. 45 million for the supply of a complete sugar plant to Malaysia. (*Details of this contract appeared at page 4 of issue No : 11-Vol. III of this Weekly*).

The Bombay firm's diversified range of production includes sugar mill machinery, paper and pulp plants, cement plants, sugar, refined spirit, plastic goods, water tube boilers, high speed centrifugal gears, gearboxes and pinions. During the year under review, they produced 176,000 tonnes of sugar and supplied 30,043 bags of raw sugar to the Indian Sugar Industry Export Corporation Limited. Their production of rectified spirit was at 3.70 million litres and plastic goods production amounted to Rs. 618,000.

CABLES AND WIRES ON EXPORT FRONT

India's cables and wires industry has come of age. It contributes substantially to the country's foreign exchange earning. During 1971-72, the exports in the line amounted to Rs. 103.70 million, according to the Engineering Export Promotion Council, Calcutta.

Among the varieties of cables and wires supplied abroad during the year, insulated wire cables alone fetched Rs. 50.76 million (as against Rs. 27 million in 1970-71), accounting for nearly 50 per cent of the entire export value. USSR, with an intake worth Rs. 17.95 million, was the leading buyer, followed by Singapore at Rs. 10.75 million and Kuwait at Rs. 5.67 million. Malaysia, Iran, Sudan, Qatar, Arab Republic of Egypt and German Democratic Republic were among other buyers.

Bare copper conductors, the second best variety, netted Rs. 33.66 million during the year. Iran was the foremost buyer and its intake was valued at Rs. 26.71 million. Singapore, Qatar, Sri Lanka, New Zealand, Jordan, Kuwait and Hong Kong were among the other destinations.

Yet one more variety active in the line-bare aluminium conductors, earned Rs. 18.88 million. With an intake value at Rs. 7.68 million, USSR again topped the list of buyers, followed by Iran at Rs. 3.03 million. Singapore, Yugoslavia and German Democratic Republic were the other prominent markets. Copper winding wire was one more variety active in the exports during the year. New Zealand, Singapore and Hong Kong were the prominent importing countries.

Adding the efforts of the sector engaged in the manufacture of cables and wires, M/s. Mysore Wires and Metal Industries, Bangalore, were able to increase their exports of cables, wires, paper covered wires and flats etc. to Rs. 2.88 million during 1971-72 from Rs. 1.77 million in the preceding year. The export destinations of the firm included Sri Lanka, Malaysia, Singapore, Philippines, Kuwait and Iraq.

Categorised as one of the priority industries in the country, the range of items manufactured by the industry includes ACC/ACSR conductors, winding wires, PILC power cables, telephone cables, PVC power cables, PVC/VIR cables and switch board cables for telephones and bare copper conductors.

EXPORT PERFORMANCE AND POTENTIAL

DYEING AND TANNING MATERIAL EXPORTS DOUBLED

The dyeing, tanning and colouring materials recorded an impressive export performance at Rs. 44 million during the first half of 1972-73 (April-September 72) registering more than 100 per cent increase over the export value at Rs. 21.78 million during the corresponding period of the previous year.

All the categories active in the line witnessed uptrend during the period. For instance, synthetic organic dyestuff, natural indigo and colour lakes, the foremost category active in the line, fetched over Rs. 22 million as compared to only Rs. 8.63 million while pigments, paints, varnishes and related materials brought in over Rs. 20 million as against Rs. 12.49 million. Dyeing and tanning extracts and synthetic tanning materials too registered a marginal improvement at Rs. 0.83 million against Rs. 0.65 million.

Among the prominent varieties that were supplied abroad in the category of synthetic organic dyestuff and natural indigo colour lakes, lakes solvent dyes organic pigments earned Rs. 4.68 million while vat dyes netted Rs. 4.23 million, direct dyes and sulphur dyes Rs. 3.81 million, reactive dyes and azoic dyes Rs. 3.44 million, basic dyes Rs. 2.65 million and acid dyes over Rs. 2 million. Disperse dyes and other organic synthetic dyestuffs were the other varieties exported. Bulgaria, USSR, Switzerland, Arab Republic of Egypt, USA, Hong Kong, Japan, Federal Republic of Germany, Argentina, Netherlands, Iran, UK and Thailand were the major export destinations.

In the category of pigments, varnishes and related materials, prepared paints, enamels, lacquers, varnishes, artists colours fetched the maximum value at Rs. 19.12 million, accounting for the major share of the foreign exchange earned by the entire category. A large number of items was supplied abroad such as varnishes, synthetic enamels, ready mixed paints, prepared inorganic pigments, prepared organic dyestuff, pigments dry and artists colours. USSR, Iran, Nepal, Bangladesh, Iraq, USA, Abu Dhabi, Netherlands, Philippines, Japan and Thailand were the prominent buyers. Colouring materials and printing inks were the other varieties active in the line.

In the category of dyeing and tanning extracts and synthetic tanning materials, cutch extracts, tanning extracts of vegetable origin and synthetic tanning materials were the varieties mainly supplied to Bangladesh, New Zealand, Federal Republic of Germany, Afghanistan and Sri Lanka.

In the organised sector, the production of paint industry in 1971 was estimated at Rs. 655.81 million as against Rs. 624.17 million in 1970. The production range includes paints, enamels and varnishes, tatanium dioxide, aluminium paste/powder, zinc oxide, red lead, white lead, synthetic resins, chrome colours, N. C. lacquers, brake fluid, prussian blue, ultramarine blue, benificate illiminite, printing inks and wire enamels/impregnating varnishes.

In the dyestuff sector, the production during 1971 was estimated at Rs. 478 million as against Rs. 551.50 million in 1970. The industry manufactures a large range of items which includes azo dyes, acid direct dyes other than azo, basic dyes, disperse dyes, fast colour bases, food dyes, naphthol, oil and spirit soluble dyes, optical whiteners, organic pigments, pigment emulsion, reactive dyes, stabilised azoics, sulphur black, sulphur dyes other than black, vat dyes, solubilised vats and irgrain dyes.

TRADE PROTOCOL WITH POLAND

A Trade Protocol was recently signed in New Delhi between India and Poland.

The Protocol envisages substantial increase in exports of Indian cotton textiles, synthetics, including readymade garments, knitwear etc. to Poland during 1973. Other commodities, which Poland would buy in larger quantities are deep freezers, refrigerators and compressors for domestic and commercial use, cosmetics, toiletries and detergents, including soaps, E.P.N.S. German Silverware and cast stainless steel cutlery, stationery, including mathematical instruments.

India has indicated its long-term interest in the increased supplies of fertilisers, sulphur and non-ferrous metals by Poland. Both sides have shown interest in the conclusion of long-term arrangements for the supply of commodities of mutual interest.

The first meeting of the Indo-Polish Committee on Trade Exchanges was held in New Delhi from April 2 to April 6, 1973. The Joint Commission was established on January 14, 1972 by an exchange of letters during the visit of Mr. Jan Mitrega; Vice-Chairman of the Council of Ministers of Poland.

The Joint Commission has set up three Committees—on Trade Exchanges, Mining and Construction of Mining Machinery and Heavy Industry. The first Session of the Joint Commission is scheduled to be held at Warsaw in June this year.

Other matters on which views were exchanged between the representatives of the two countries included production cooperation in the fields of textile industry, leather industry and food processing industry, establishment of joint ventures and the conclusion of a new Long-Term Trade and Payments Agreement on the expiry of the current Agreement.

Alongside the Trade Protocol, the two countries have also concluded on agreement on cooperation in marine fisheries.

TRADE PATTERN WITH LATIN AMERICA

During 1971-72, India's exports to Latin America were valued at Rs. 125.8 million while imports from that country amounted to Rs. 57.4 million. In 1970-71, the exports were Rs. 83.1 million and imports totalled Rs. 142.60 million. The country thus had a favourable balance of trade with Latin America by Rs. 68.4 million in 1971-72 as against a deficit of Rs. 59.5 million in the previous year. In the first seven months of 1972-73 also exports at Rs. 46.1 million were more than imports at Rs. 18.2 million.

Argentina and Chile were mainly responsible for the trade balance in favour of India in 1971-72. Value of supplies affected to Argentina nearly doubled to Rs. 60 million from Rs. 33.4 million in 1970-71, while imports from that country declined sharply to a low level of Rs. 1.3 million from Rs. 40 million. The intake of Indian goods by Chile rose to Rs. 23.4 million from Rs. 2.1 million and imports from that country registered a marginal decline. Other countries in the region also contributed to greater offtake of supplies from India. For instance, the intake of Costa Rica improved from Rs. 5.4 million in 1970-71 to Rs. 6.6 million in 1971-72; Dominican Republic from Rs. 1.5 million to Rs. 2.3 million; Guyana from Rs. 2 milllon to Rs. 5.8 million; Paraguay from Rs. 0.8 million to Rs. 2.2 million; Peru from Rs. 4.8 million to Rs. 9.1 million; Trinidad from Rs. 5.2 million to Rs. 7.8 million and Uruguay from Rs. 6 million to Rs. 6.5 milllon. On the other hand, the imports from these countries registered a decline, leading to a favourable balance of trade. Exports to Columbia were negligible during both the years; the imports from that country, however, again fell sharply to Rs. 0.8 million from Rs. 6.2. million.

Among other countries in the region, the intake of Bolivia decreased from Rs. 1.8 million in 1970-71 to Rs. 0.9 million in 1971-72; Brazil from Rs. 8.3 million to Rs. 5.6 million; Ecuador from Rs. 1.4 million to Rs. 0.7 million; Jamaica from Rs. 3 million to Rs. 2.9 million; Republic of Panama from Rs. 3.5 million to Rs. 2.7 million and Venezuala from Rs. 1.4 million to Rs. 1.1 million. The loss in exports was, however, made more than good due to proportionately sharper decline in imports from these countries.

Mexico and Netherland Antilles were the only two countries in the region where India could not improve the trade balance in her favour. Exports to Mexico witnessed a decline from Rs. 9.8 million to Rs. 8.7 million in 1971-72, while imports nearly doubled from Rs. 7.7 million to Rs. 15.3 million. Similarly, imports from Netherland Antilles increased from Rs. 5.0 million to Rs. 8.3 million which more than offset the slight gain in exports from Rs. 0.8 million to Rs. 1.2 million.

Efforts to further expand trade with the Latin American region are on and the major areas of emphasis in this context are conclusion of trade agreements, establishment of local offices, agents and publicity, and exchange of delegations.

TRADE CO-OPERATION AGREEMENT WITH IRAQ

An Economic and Technical Co-operation Agreement was signed recently between India and Iraq.

Under this Agreement, India shall assist Iraq with the supply of goods and services for a number of Iraqi development projects such as the Baghdad-Ramadi-Al Qain Railway Project, Steel rolling mills, electric power transmission facility, ship building and repair facilities, supply of Iron Ore for Iraqi steel project, Cotton, woollen and sugar manufacture mills, power transmission and distribution equipment, mills for manufacture of light engineering goods, wire and cable factory, aluminium project, fertilizer project, storage tanks pipe lines and equipment for petroleum and chemical industries and equipment and machinery for fertilizer and natural gas plants.

The Agreement also provides for supply of Crude Oil by Iraq to India under bilateral trading arrangements which could be on balanced basis to the greatest extent possible. This means that India would be getting substantial quantities of Crude Oil from Iraq against export of Indian goods.

According to the Agreement, settlement of accounts between the two countries will take place every six months. It also envisages that both sides would start their respective exports immediately without waiting for funds to be generated on either side.

This Economic and Technical Co-operation Agreement with Iraq gives a new dimension to the economic relationship prevailing between the two countries to their mutual advantage. The Agreement is, in fact, culmination of the negotiations which had been started in 1966 between the two countries on the subject.

EXPORT TREND IN SCIENTIFIC INSTRUMENTS

India's export earning from overseas supply of scientific, medical, optical. measuring and controlling instruments and apparatus rose sharply to fetch Rs. 12.18 million during the first 6 months of 1972-73

(April-Septembor 72) as compared to Rs. 7.58 million in the corresponding period of the previous year.

Considering the full year's exports in the line during 1971-72 at Rs. 16.50 million, the export earning (Rs. 12.18 million) during the first half of 1972-73 reveals an impressive uptrend. During 1970-71, the export value amounted to Rs. 14.22 million.

During April, September 72, medical instruments constituted the major area of export earning which brought in Rs. 4.75 million. Blood pressure instruments, ENT and eye precision instruments, hollow needles for injection, stethoscopes, surgical bone saw drills, surgical chisel gouges, surgical forceps clips, surgical knives and scissors, surgical retractors spatula, surgical specula cathetars, surgical suture needles, syrings of all glasses and record type, medical, dental and surgical instruments and apparatus, mechano therapy appliances etc. were the items supplied abroad. USSR, Nepal, U.K,, Nigeria, Poland, Bulgaria, Iraq and Sudan were the leading destinations for these items.

Spectacles and their frames, an another category active in the exports, netted Rs. 2.50 million. Plastic frames of spectacles, other material frames for spectacles, spectacle frame parts, goggles and other spectacles were mainly supplied to USSR, Singapore, Yugoslavia, U.K., Kenya, Hong Kong, Belgium and Saudi Arabia.

Measuring, controlling and scientific instruments which include surveying instruments and parts, 5 CG or better balances, drawing instruments, mathematical calculating instruments, calipers verniers and micrometers, measuring rods and tapes, plug gauges, measuring or checking instruments, model instruments for education, technical model parts, hardness strength testing machines, mechanical appliances for testing physical properties of industrial materials, clinical thermometer, other thermometers (excluding electrical), pyrometers, pressure gauges, apparatus for measuring liquid and gas flow, spectrometers, porosity measuring apparatus, heat light measuring apparatus and physical or chemical analysis instrument parts, netted Rs. 2.63 million. U.S.S.R., U.K., Nepal, Nigeria, Bulgaria and Poland were the main buying countries.

In addition to these main categories, the export values of other categories were : photographic, camera and flashlight apparatus including and accessories (excluding cinematograph) Rs. 1.28 million; cine cameras, projectors and sound recorders and their parts and accessories Rs. 0.53 million. Federal Republic of Germany, U.S.A. and U.K. were the leading markets.

Binoculars and other optical instruments, optical elements, photo and cine apparatus and equipment, meters and counters (non-electric) were also the other categories of export.

The total turnover of India's instruments industry in 1971 was of the order of Rs. 361 million. During the year, 12 units were engaged in the manufacture of scientific, surveying, optical and mathematical instruments. As against their installed capacity worth Rs. 38 million, their production was estimated at Rs. 24 million. There were 8 units engaged in the manufacture of medical and surgical instruments with an installed capacity worth Rs. 35 million in the same year. Their production during the year was estimated at Rs. 16.22 million.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PROGRESS AT KALPAKKAM ATOMIC PROJECT

With the Tarapur atomic power project on stream and the Rajasthan project well underway, the third atomic power station in India is under active construction at Kalpakkam in Tamil Nadu. Consisting of two units, each with an installed capacity of 235 MW and a sent out capacity of 215 MW, the Kalpakkam station is to be of the same basic type as the one at Rajasthan, the first unit of which went critical in 1972.

Both the Rajasthan and Kalpakkam stations employ only natural uranium as fuel and heavy water as moderator. Tarapur Station, however, employs enriched uranium as fuel and ordinary water as moderating and cooling medium.

The Tarapur station was built on the basis of a turnkey type contract placed on Messrs. General Electric Company of U.S.A. For the Rajasthan station, the responsibility for design and engineering was entrusted to the Atomic Energy of Canada Limited and

M/s. Montreal Engineering Company Ltd., a consulting engineering company in Canada. The responsibility for construction of the Kalpakkam project, however, is that of the Department of Atomic Energy. Government of India.

The Kalpakkam Project will indeed be the first atomic power project for which complete responsibility for design, engineering, construction and commissioning has been assumed by the Indian scientists and engineers. From this point of view, the project occupies an important position in the country's atomic power programme. In the execution of this project, the Department of Atomic Energy is associated with renowned Indian consulting engineering organisations to render assistance in the field of conventional designs. M/s. Tata Consulting Engineers have been associated with the conventional designs, reactor building, the cooling water intake and outfall structure as also the electrical switchyard. Again, Messrs. Development Consultants Private Limited have been associated with the conventional part of the turbine building work as well as the design of services such as the demineraliser plant, air conditioning and ventilation. Further, the services of Messrs. STUP India Ltd., a specialist firm in prestressed conerere are also being utilised for the design of the concrete wall of the reactor building.

Practically all the equipment for the Kalpakkam station, whether for the nuclear part or for the conventional part are being manufactured in Indian shops. The reactor vessel (known as 'calandria') and shields, boilers, shield tank, dump tank, fuelling machines, turbine generator, main transformer, large sea water pumps for circulating condenser cooling water are among the host of equipment being manufactured within the country. Certain raw materials such as stainless steel, alloy steel, carbon steel and special sizes and monel that are currently not being produced within the country are being imported, however. The import content for the units of the Kalpakkam project is expected to be 22 per cent. It may be compared with 58 per cent for the Tarapur station. 57 per cent for the Rajasthan Project Unit I and 40 per cent for the stage II of the project. In view of the decision to manufacture a sizeable part of the required equipment for the station indigenously, a massive programme of development of domestic capability for high precision and specialised equipment has been taken up.

Some of the latest construction techniques so far used anywhere in the country are being adopted in the activities at the station site. The reactor building perimeter wall, for instance, is being constructed in prestressed concrete which is the first such application in the country measuring about 40 metres in diameter and nearly 53 metres in height is designed to withstand a maximum static pressure of 1.16 kg. per sq. centimetre. Normally in nuclear power stations, the outer wall of the reactor building is designed in such a manner that even after a worst conceivable accident, the radioactive material from inside the reactor building does not spread to the environment. For the Rajasthan reactor, a re-inforced concrete construction for the cylindrical part with a prestressed concrete dome has been adopted. And now for the Madras reactor, both the cylinderical wall and the dome are being completely built in prestressed concrete. Currently, the prestressed concrete perimeter wall of the first unit of the station has reached over 25 metres above grade level and the dome work is expected to be taken up soon.

An interesting construction under progress at the Kalpakkam station relates to the cooling water system. After considering a number of alternative systems available for drawing cooling water, it was decided that construction of a tunnel under the sea bed was the best alternative. Another interesting feature of the station concerns the adoption of an indoor switch-yard for housing all the circuit breakers, disconnects and other equipment. At Tarapur, the first high tension switchyard close to the sea in the country, it was noticed that saline deposit on insulators gave rise to unsatisfactory operation. It was concluded that it would be economical at Kalpakkam to employ an enclosed switchyard.

In a construction such as the one at Kalpakkam, it is recognised that prime necessity would be to deploy extremely high quality workmanship equally in concreting, welding and dimensional checks. For this purpose a well-staffed concrete laboratory is maintained as also facilities for radiography, dye penetrant, magnetic particle testing ultrasonic examination and helium leak detection.

The construction of Kalpakkam atomic power project has thus posed quite a few challenges to the Indian talent, which is indeed rising to the occasion. The experience generated in this enterprise is to surely go a long way in establishing self-reliance in atomic technology.

ROGRESS IN DEFENCE RODUCTION

There are eight public sector undertakings onstituting an important base for the manufacture of quipment required for Defence Services in India. ndertakings like the Hindustan Aeronautics, the harat Electronics, the Mazagon Dock, the Garden each Workshops, the Bharat Earth Movers and the harat Dynamics mainly operate in the field of aeronau-ics electronics, modern warships, heavy earth-moving quipment and missiles. All these public sector ndertakings came into being after Independence and he last of them, the Bharat Dynamics, was established n 1970-71 and it has already taken up production of nti-tank missiles from imported components.

The total value of production achieved by the efence public sector undertakings during 1970-71 was s. 1610 million. The estimated value of production uring 1971-72 and 1972-73 are Rs. 1789 million and s. 2274 million respectively.

ERONAUTICS

Foundations of the aircraft industry in India were aid in 1940 when the *Hindustan Aircraft Ltd.* came into xistence. An important step was taken in 1964 when he Hindustan Aircraft and the Aeronautics (India) ere incorporated into Hindustan Aeronautics Ltd. his measure was designed to secure better coordination n policy, expansion and production of aircraft in India. he Hindustan Aeronautics Ltd. are currently producng Jet Ground Attack Fighter HF-24, the supersonic ntercepter MiG-21, Jet Fighter Gnat aircraft, the rainer HJT-16 and the medium transport aircraft S-748 for the Air Force and the Indian Airlines. he Undertaking is also manufacturing K-13 missiles or MiG aircraft. The Hyderabad Division of the industan Aeronautics produces airborne electronic quipment and instruments for the MiG aircraft.

The production of MiG-21 had been planned in our phases, viz., from major assemblies, from sub-ssemblies, from details and from raw materials. The ountry has already reached the stage of manufacture f air frame from raw materials; the first engine produced rom raw marerials is likely to be delivered shortly. It as also been decided to produce an improved version f MiG-21. The new aircraft will be distinctly superior to the MiG-21 in range, speed and fire-power. The delivery of the improved version will commence in 1973-74. Military Freighter version of HS-748 aircraft, suitably modified for para-dropping and supply-dropping roles, will soon be subjected to trials.

Concerted efforts are being made to establish indigenous source of supply for as many items of imported stores for the aircraft industry as possible. Aircraft accessories and instruments form 25 to 30 per cent of the cost of modern aircraft and these are presently being imported. With a view to achieving self-sufficiency in this area, a separate Division of Hindustan Aeronautics Ltd. has been established at Lucknow.

New types of aircraft have been taken up in accordance with the changing requirements of the Indian Air Force and the resources available. HF-24 and HJT-16 were designed and developed by HAL themselves. To meet the need of the Air Force in 1980s, a proposal to design and develop an Advanced Strike Aircraft incorporating the latest technology is under consideration. The design and development of a helicopter for meeting the future requirements of defence is also being taken up.

DEFENCE ELECTRONICS

The establishment of *M/s. Bharat Electronics* in 1954 marked the first step on the road to self-sufficiency in the wide range of electronic and electrical equipment required by the Defence Services. At the commencement of the emergency in 1962, there was a serious shortage of signal equipment; the Bharat Electronics rapidly stepped up and diversified its production. The Company entered into collaboration agreements with a number of foreign firms with a view to establishing know-how of modern techniques.

A very broad base has now been created in the field of electronics for the indigenous manufacture of vital components. A large number of electronic equipment in the various frequency ranges and a number of radar equipment for the Defence Services are now being produced by the Bharat Electronics and the Hindustan Aeronautics. These include high grade professional electronic equipment comprising transmitters/receivers, trans-receivers and fire control and other radars for the use of Defence Services as well as civil departments such as Radio, Communications and Police. In the

Components Division, the Bharat Electronics are producing several types of specialised components such as receiving valves, Germanium/Silicon transistors, Transmitting Tubes, Magnetrons, TV Picture tubes and Cathode Ray Tubes.

The Bharat Electronics is shortly setting up its second unit at Ghaziabad for the production of sophisticated radar and microwave equipment. The firm has also plans to take up the manufacture of integrated circuits to meet the futuristic requirements of electronic equipment. The company which was initially planned for an annual production worth Rs. 42.5 million will now be producing Defence equipment to the value of Rs. 300 million. The Hyderabad Division of the firm which is presently producing electronic equipment only for the MiGs has plans to undertake manufacture of several other equipment required for the Defence Services.

WARSHIPS

In 1960, a significant step was taken in the extension of the nationalised ship building and repair industry.

The *Mazagon Dock,* after nationalisation, was expanded and modernised at a total cost of Rs. 80 million. The ship building yard is now capable of constructing destroyers, frigates, passenger ships, passenger-cum-cargo ships, cargo ships, dredgers, tugs, barges, trawlers, launches, floating docks and assault boats. Six Leander Class Frigates for the Indian Navy are at present on order with Mazagon Dock, one of which has been commissioned into the Indian Navy. The Dock has also delivered one Bucket Dredger, two inshore Minesweepers and two AVCAT Tankers to the Navy, besides cargo-cum-passenger ships to the Shipping Corporation of India and Bombay Port Trust.

The Company is earning foreign exchange by repairs to ships under foreign flags. In 1969-70, it repaired 222 ships, earning Rs. 12.10 million in foreign exchange. During 1970-71, it repaired 200 foreign ships earning Rs. 17 million in foreign exchange. The annual turnover of the Company has risen from Rs. 25 million in 1960-61 to Rs. 137.30 million during 1969-70.

The Garden Reach Workshops have completed the main factory building for its marine diesel engine factory at Ranchi and the production of engines has commenced. The Garden Reach Workshops have also recently undertaken the execution of expansion/modernisation plan at a cost of Rs. 80 million. These facilities, when fully implemented will enable the yard to undertake the construction of ocean-going vessels, each of 15,000 DWT to 25,000 DWT.

EARTH MOVERS

M/s. Bharat Earth Movers Ltd. (BEML) was set up in 1964 for the manufacture of heavy earth moving equipment such as scraper and dumpers. The rail coach division of the Hindustan Aeronautics was transferred to Bharat Earth Movers in 1965. This Division of Bharat Earth Movers located in Bangalore manufactured 270 rail coaches in 1970-71. The production capacity at the factory is now being expanded to reach the target of 400 coaches a year by 1974-75.

The Earth Moving Equipment Factory is located at Kolar Gold Fields. Though the factory has not been fully commissioned, it has made considerable progress during the last three years. In 1970-71, the factory produced 40 motorised scrapers, 75 numbers of 35 ton off the high-way Rear Dump Trucks, 30 motor-graders, 77 Tiger SE Wheeled tractors, 140 D-80 tractors, 45 D-120 tractors and 125 D-50 crawler tractors. The over-all indigenous content achieved by BEML is nearly 60 per cent. *The Company has entered the export market with an order of six motor graders for Nepal.*

The Bharat Earth Movers will be producing 50 ton capacity off the-high-way Rear Dump trucks. The Company is also proposing to produce similar Rear Dump trucks of 25-ton capacity.

AMMONIA DRIVEN AUTO ENGINE

India's first auto engine, using ammonia vapour as fuel has been designed and developed by the Indian Institute of Technology, New Delhi, recently. In fact, it has been possible to convert the conventional four cylinder gasoline engine into an ammonia engine without any modification.

Unlike a gasoline engine, the exhaust from Ammonia engine is free from carbon monoxide and lead pollutions but contains some unburnt ammonia which is toxic and hazardous. However, the amount of ammonia is so small in exhaust pipes that it can be converted into harmles nitrogen and hydrogen by placing an 'after burner' in the tail pipe.

An auto engine with ammonia vapour is claimed to run smoother than its gasoline counterpart with a power output which is 90 per cent of that obtainable with gasoline. The smoothness in operation of ammonia engine is mainly attributed to ammonia's high octane number. The colourless ammonia gas is also claimed to be a cleaner fuel than gasoline. After continuous trial running on ammonia, no corrosion of the engine was noticed nor any dirty residue was found inside.

The ammonia powered vehicle is also extremely useful to military from the point of view of its ability to maintain its power output even at high altitudes. In the conventional gasoline engine, horsepower drops drastically with height as it has to breathe in more than twice as much air as is needed for ammonia engine.

Even the diesel powered engine can use mixture of diesel and ammonia in place of diesel oil which is imported. Such a bi-fuel engine is working at the Delhi Institute with 10 to 30 per cent greater efficiency and 40 per cent saving in diesel oil.

Ammonia to be used as fuel, can be synthesised from air and water using electricity from nuclear plants. It is claimed to be excellent substitute for gasoline which is getting scarce.

INDUSTRIAL FILTERATION EQUIPMENT INDUSTRY

With an installed capacity of about Rs. 22 million, the output of 6 units engaged in the production of industrial filteration equipment in India, was estimated at Rs. 22.50 million in 1971, achieving 100 per cent capacity utilisation. In 1970, 5 units in the line, having an installed capacity worth Rs. 20.10 million, manufactured the equipment valued at Rs. 20.50 million.

The industry's production range covers centrifuge type of filteration equipment, mineral oil purifier and vegetable oil refining plants. These equipment mainly cater to the requirements of processing industries like oil purification (edible and non-edible) and filteration of chemicals.

The present trend in the manufacture of these equipment is to undertake production of self cleaning continuous type of centrifuges. These centrifuges are being manufactured in the country mainly for the marine industry. Centrifuges manufactured are high speed bowl and basket types. The static type of filteration equipment comprising steamline filters (with or without vacuum) are mostly required for purification of transformer oil. Element type of industrial filters, to be fitted with various industrial machinery and machine tools equipment are also being manufactured by the industry.

The imported content of the industry ranges from 5 to 12 per cent only. It is limited to procurement of treated filter paper and independent bought out components like bearings, controls, instrumentations. With the installation of continuous impregnating plants, the base paper available in the country would be treated and will be substituted for the imported treated filter paper.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

INVENTION OF MULTIPURPOSE MACHINE

A new pedal-operated multipurpose machine useful to goldsmiths, blacksmiths, weavers, carpenters and other craftsmen has recently been invented by an inventor of Trichur, Kerala State.

The machine can be used for sawing soft timber, carving plywood fancy article, grinding knives and agricultural equipment, drilling soft wood and thin sheets of metal and for many other applications in a variety of cottage industry. It finds wide application in synthetic diamond polishing which is one of the major cottage industries in southern part of the country. The machine being compact and precise enables workers to earn a better living wage with less effort.

Most of the parts and mechanism involved in the manufacture are simple and indigenously available. The inventor has made use of part of a cycle like wheel, pedal, chain etc. The rear portion of the machine resembles scooter and the front a table.

The first sample made and perfected after trials is being used regularly by a skilled worker in the trade.

The main items of equipment required in the process are cycle wheel rim, drive gear with verticle shaft table and C. I. flywheel. With a total weight of about 40 kg., the machine occupies a floor area of about 8 sq. ft.

APPARATUS FOR ATTARS AND PERFUMED WATERS

A simple apparatus has been designed by National Botanic Gardens (NBG), Lucknow, for the manufacture of attars and perfumed waters viz., rose, dill, aniseed, fennel, etc. The essential oils are used both in medicine and in perfumery industry. Attar is used in high class cosmetics, toilet, perfume preparations and in flavours.

The main draw back of the conventional (Deg type) technique which is extensively used for water distillation of flowers and seeds is the over heating of the plant material leading to deterioration in quality of the resultant products. The condensation of the perfumed vapours is rather faulty and there is always some loss due to leakage. Separation of oil from the perfumed water is also a major difficulty.

All these draw backs have been eliminated in the new apparatus. It is so constructed that the separation of oil and the collection of the perfumed water is automatic. Its double cooling system allows proper condensation of vapours and as the danger of charring the plant material is minimised, the quality of the products obtained is much superior. Quality of oil distilled is of standard quality meeting all the ISI requirements.

The device designed by NBG comprises a distillation flask of desired capacity, the main body consisting of a system of tubes and a condenser, all inter-connected one above the other through joints. The main body has two side limbs through which the vapours from the flask pass to the condenser. After condensation, the distillate drips down into a graduated tube in the main body, where it is collected and cooled and the oil separated from the water. The excess perfumed water stored in the graduated tube is automatically siphoned off to a jacketted receiver.

Especially suited for small-scale manufacture of attar and perfumed water, this handy device can be made of glass, copper or stainless steel. The distillation apparatus can be fabricated of different capacities according to need. Being scientifically designed, it gives accurate content of the essential oil present in the plant materials, even though the oil content is very small.

DEVELOPMENT OF FLUID ENERGY MILL

Non-availability of mills in India for fine grinding of products into micron size range, stressed the need to undertake work on design and development of such a mill. Consequently, considerable research work by Indian Institute of Technology (IIT), Madras, has led to the successful designing and fabricating of a fluid energy mill which is the latest addition in grinding equipment.

The conventional mills such as different types of ball mills are not useful in producing ultrafine or micron size solid particles, as required in many industries dealing with paints, cosmetics, minerals, explosives and various chemicals. The product from the ball mills is coarser and also suffers from lack of lustre and other desirable characteristics due to generation of heat during grinding.

In the fluid energy mill grinding results from impact and attrition between rapidly moving particles of the material being ground. The energy to achieve these high particle velocities is supplied by a compressible fluid like air, gas or steam, which enters the mill at high speeds through specially designed nozzles. The classification of the ground material takes place due to difference in the centrifugal forces acting on particles of different sizes when moving in a curved path. Fluid energy mills have a great potential demand in the country. These are at present being imported.

The design of the mill developed by IIT is simple and it has no moving parts. It consists of a vertical oval shaped tubular assembly having a feed injector nozzle on one side and the grinding nozzles at the bottom. The lower portion is known as the grinding zone and the upper as the classifying zone. Compressed air (at room temperature or preheated), freed from moisture by silica gel drier is fed to the mill through the grinding and injector nozzles. The feed material is introduced into the mill through a pneumatic feed injector. Steady feed rate of the material is ensured by the use of a vibrating feeder. Particles get partially ground in the grinding zone and travel up to the classifying zone. Coarser particles travel along the outer periphery, join the fresh feed material and again pass through the grinding zone. The particles of the required size pass through an outlet in the mill to a cyclone and get collected in the product bin. Air from the cyclone gets discharged into atmosphere through a bag filter.

The experimental mill designed and fabricated by IIT, has a capacity of 5 to 12 kg. per hour and produces materials in the size range of 5-15 microns (1 micron=1/1000 mm) depending on the hardness of the material. Some of the materials successfully ground are aluminium hydrate, china clay, carbon black, dye stuffs, ferro silicon, graphite, iron ore (magnetite), mica, quartz and resin.

Fluid energy mill has several advantages over the conventional grinding equipment. These are :

Products are of specific particle shape and fall in a narrow size distribution in the micron range; the product is free from any contamination with metallic particles. (This is of particular significance to the pharmaceutical industry); the maintenance of the mill is easy and economical due to absence of moving parts and minimum wear; cooling effect resulting from expansion of fluid medium enables grinding of heat-sensitive materials like organic chemicals, resins etc. (In case further cooling is necessary refrigerated fluid could be used); by using a suitable inert fluid medium the mill can be used to grind explosive materials and simultaneous grinding and drying of the material can be achieved by using hot compressed air.

The equipment required for the fabrication of the mill falls in the range of the usual workshop equipment and is available indigenously.

Air compressor, silica gel drier, screw feeder, bag filter, cyclone, vibrating feeder etc., are some of the major components which are indigenously available or could be fabricated locally from indigenous materials.

PROCESS FOR DYEING WOOL AND HAIR

Large quantities of hair; wool and other keratinous fibres are exported after only an acid wash and cleaning. If, however, the above materials are dyed before they are shipped, they are likely to fetch a much higher price as there is a demand in the foreign markets for wool and hair of uniform colour, preferably black.

In view of the above, Central Leather Research Institute (CLRI), Madras, has developed a process for dyeing wool, hair etc., of non-uniform shade into a fast jet black shade.

The process developed by CLRI consists in subjecting the keratinous material to acid washing, scouring, mordanting and dyeing and fat liquoring. The shade developed has good depth, lustre, softness and is fast to light, dry and wet rubbing, to bleeding in hot water, and in hot detergent solution. The samples of the material producted in the laboratory have come up to the standards required and consumers have also reacted favourably.

Machinery and chemicals required in the process are indigenously available. The additional cost of processing grey or brown hair from the acid washed and scoured condition to the jet black shade is only nominal

Tanneries now processing hair wool are in a better position to set up the plant for dyeing as well. Since there is a good demand for hair wool of jet black shade in foreign markets, the developed process will be very useful for tanners.

DIRECTION PATTERN OF INDIA'S EXPORT TRADE

In million rupees

Region	1971-72	1971-72 (April-September)	1972-73 (April-September)
Africa	**1319.10**	**567.30**	**525.95**
Arab Republic of Egypt	230.50	103.95	155.80
Sudan	517.40	194.90	75.05
Nigeria	98.90	50.70	46.75
Kenya	78.35	40.35	31.00
Tanzania	41.40	29.00	23.35
North America	**3021.95**	**1508.55**	**1620.75**
U.S.A.	2627.90	1301.35	1452.35
Canada	394.00	207.20	168.40
Latin America	**125.80**	**65.25**	**26.20**
Argentina	60.00	29.65	4.90
Other American Countries	**28.00**	**16.60**	**11.05**
ECAFE Countries	**3831.50**	**1898.60**	**2195.90**
Japan	1817.00	811.60	937.20
Bangladesh	380.00	—	360.90
Nepal	284.35	128.75	175.50
Iran	197.45	96.40	144.25
Australia	279.25	136.40	126.70
Hong Kong	154.65	87.00	86.70
Singapore	175.15	91.80	76.55
Sri Lanka	212.10	126.90	44.00
Other Asian and Oceanian Countries	**625.25**	**292.65**	**385.60**
Kuwait	106.85	50.35	71.95
Iraq	97 10	49.85	56.20
Saudi Arabia	111.25	45.65	60.45
East Europe	**3434.80**	**1698.30**	**2266.00**
U. S. S. R.	2086.75	1067.05	1489 95
Czechoslovakia	304.50	131.95	232.55
Poland	199.15	70.65	197.25
Bulgaria	154.80	58.15	102.70
German Democratic Republic	179.50	110.25	66.50
Yugoslavia	243.70	130.35	61.20
European Economic Community Countries	**1237.70**	**545.00**	**946.35**
Federal Republic of Germany	367.50	181.80	302.00
Italy	214.50	97.05	197.50
France	241.25	101.70	192.55
Netherlands	147.15	65.65	136.35
Belgium	240.30	98.75	117.90
European Free Trade Association Countries	**1880.00**	**881.90**	**1070.00**
U. K.	1680.80	786.35	909.80
Sweden	60.30	22.80	78.75
Switzerland	74.80	40.25	36.15
Other European Countries	**131.20**	**67.25**	**116.20**
Turkey	20 10	14.15	44 60
Ireland	57.85	32.35	41.00
Spain	31.00	9.75	16.85
Total of all Countries (excluding re-exports)	**15635.45**	**7541.50**	**9164.00**

Source : Department of Commercial Intelligence and Statistics, Calcutta.

SPOTLIGHT ON TEXTILE MACHINERY

Alongside the modernisation of textile industry in ndia, the manu-facturing sector of textile machinery ias been witnessing rapid developments. The indusry has taken a firm step towards self-sufficiency in a vide range of machinery and stores and has also establihed its reputation abroad as a prominent supplier of quality machinery on competitive pricing considera ions. Over the years, it has diversified its production ange to such an extent that several sophisticated lines ire already active on production stream in collaboraion with reputed foreign machinery manufacturers.

The installed capacity for the production of textile nachinery in India stands today at about Rs. 450 nillion per year. In fact, the total licensed capacity is f the order of Rs. 670 million per annum. The trends f actual output in recent years have been particularly ncouraging. The value of output was in the neighourhood of Rs. 151 million in 1968 while it consitently ose to about Rs. 200 million in 1969, Rs. 302 million n 1970 and over Rs. 350 million in 1971.

In the broad range of textile machinery that is nanufactured in India are included the full needs of he preparatory and spinning departments of textiles rom blow room lines to carding engines and from high peed draw frames, fly frames and ring frames to loublers. Automatic looms of variaus designs constiute an integral part of the production. The industry roduces pirn winders and cone winders, sizing nachines and power looms. Almost all the wet-proessing machines required by the textile mills are also nanufactured in a substantial quantity and these nclude continuous and semi-continuous bleaching lants, open width as well as rope form, singeing nachines, dyeing equipment, padders, open width vashing machines, finishing equipment, baking nachines, stenters, printing machines and calendars.

In short, the industry is today capable of manufacuring the entire range of spinning, weaving and rocessing machines.

The industry has also taken up programmes for roduction of several new lines such as fully automatic ingle spindle pirn winding machines, fully automatic varp winding machines, super speed warning machines, utomatic knitting machines, auto looms for canvas and orduroy, jet dyeing machines, automatic rotary and screen printing machines. To sustain the tempo of growth, the industry is also to take up the production of yet newer equipment that involves latest technological developments. To assure large production of good quality material at reduced costs, it has programmes to develop high speed machines with fully automated control. It is adopting certain patented processes for the purpose of spinning and chemical processing of fabrics. It is manufacturing machines required for treatment of blended fabrics and imparting certain finishes. It has also produced machines required for blended and knitted fabrics of all varieties as well as machines required for dyeing and finishing of hosiery fabric, mixed with woollen and readymade garments.

The Indian industry has to its credit several patents for textile machinery and components, some of which have been already commercially exploited and others are awaiting further development. A particular process of bleaching which has been patented both at home and abroad and has made a revolutionary impact in the world of bleaching deserves a special mention. While bleaching of cotton textiles even in the most advanced countries is done by the use of one or another kind of autoclave at high pressure and high temperature, taking two to four minutes, a process developed in India called "Flash Bleach" bleaches without high temperature and high pressure in far shorter time (20 seconds) using normal chemicals and normal concentrations.

There are also many other developments in design technology that have been adopted in India. An example is the conversion of jute spinning frames. Till such time that Indian firm developed the conversion design technology and devloped components that would improve the working in old jute spinning frames, the foreign manufacturers of spinning frames pronounced that jute frames could not be re-conditioned by conversion and that investment in new ring frames was essential. It is now understood that parties abroad are also using the conversion design. Such examples could be multiplied.

Aside from the progress made in terms of research and design development, the textile machinery manufacturers in India has also built adequate expertise in the context of ancillary production. The ancillaries include hydraulic, electronic, electrical, temperature and other process control equipment and drive elements. Even the ancillary units have the

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access of foreign technology and are moulding the imported technology to suit domestic needs.

The Indian industry has made notable strides in the context of textile machinery export also. These exports were hardly Rs. 11. 5 million in 1968. They rose to about Rs. 26 million even for the first 6 months of 1972-73. For the full year of 1971-72, the export trade in this field fetched as much as Rs. 49 million. The major variety supplied abroad relates to spinning ring frames and the leading purchasers include Arab Republic of Egypt, Malaysia, Indonesia, poland, Iraq, Sri Lanka and U.K. Non-Cotton textile fibre processing machines, cotton spinning and weaving machines and non-cotton textile fibre processing machines have also been finding their way in export markets in increasing quantities. Knitting machines, textile driving machines and a host of accessories of textile machinery are equally active on export front.

India has also undertaken turnkey, projects for several textile units abroad. Valued at about Rs.158 million, the turnkey project undertaken in Libya for a weaving and processing mill is the largest. Several other contracts were undertaken and successfully executed. Among the major recipients of Indian textile machinery are the Soviet Union, Czechoslovakia, Poland, East Germany, Arab Republic of Egypt, Sudan, Kenya, Tanzania, Iran, Iraq, Sri Lanka, Burma, Thailand, Indonesia, Malaysia, South Korea and the philippines.

By and large, the foreign importers of India's textile machinery are among the co-developing countries. In these markets the Indian exporter successfully meets vigorous competition not only from industrialized countries but also from East European economies. Countries like Sri Lanka, Indonesia, Thailand, Philippines and Malaysia offer large potential for India's machinery as their requirements for rehabilitation and expansion of their textile industries are immediate. Even some of the industrialised markets prefer to import from India in view of the labour intensive nature of some of the categories of textile machinery at comparatively less expensive costs.

The export of indigenous textile machinery has had a far reaching impact on the overall improvement of the textile economy in India. It has helped Indian engineers technicians, craftsmen, manufacturers to develop confidence in their own ability to manufacture textile machinery, most of which finds ready acceptance even in sophisticated markets abroad. Such confidence is indeed a forerunner to further heights of success to be scaled by the industry in future. ☐

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EXPORT POTENTIAL OF TITANIUM DIOXIDE

With the commissioning of the expansion schemes of M/s. Travancore Titanium Products Limited, Kochu Veli, Trivandrum round the corner, it is anticipated that India will not only become self-sufficient in titanium dioxide but sizeable surpluses can be released for export. Presently, the Trivandrum firm meets about 40 per cent of the domestic demand for the product which is an important raw material in paints, plastics, rubber and cosmetic industries.

Endowed with rich resources of sand with a high content of ilmenite, the Kerala coast line facilitates the production of titanium dioxide by the Trivandrum firm in which the Kerala State Government has a major share. The present value of production by the firm is in the neighbourhood of Rs. 32 million per annum.

With an estimated cost of Rs. 85 million, the expansion programme of the firm is awaiting commissioning by about September 1973. The first year of operation of the new project is to produce 9000 tonnes of titanium dioxide which will be mainly export-oriented. The present rate of production of the firm is about 6000 tonnes annually. At an average, the daily output is 18 tonnes now, which is planned to be expanded to the tune of 68 tonnes per day, once the new plant is commissioned.

Besides saving foreign exchange by way of import substitution to a value of about Rs. 30 million per year, the plant has ambitious programmes for releasing export surpluses. The targetted quantum of exports every year is of the order of 9000 tonnes at an approximate value of Rs. 30 million. Already the Trivandrum firm has received many an eager enquiry for long term arrangements of import from sophisticated markets such as the U.S.A. and Japan.

The indigenous content in the turnover of the plant is of a high degree. Out of an estimated investment of about Rs. 450 million over the ensuing decade and out of anticipated sales turnover of about Rs. 150 million after the commissioning of the new plant, the import content by way of imports of machinery and spares is to work out only to about Rs. 2 million.

The Trivandrum firm has the facility of an established Research and Development Wing and nearly Rs. 2.5 million are spent for this purpose every year. The research programmes of the firm are engaged in exploring ever new end-uses in various industries.

A highly sophisticated material, titanium dioxide, is thus being planned to be produced in sufficient quantities in India and in the near future, once the new plant of the firm is commissioned, the material's imports are expected to completely stop and the demand of the ever anxious international market for the product is to be sufficiently met by the Indian supply.

SUCCESS STORY OF A COIMBATORE FIRM

A small workshop and foundry set up in 1920 near Peelamedu in the State of Tamil Nadu, turned out to be the forerunner of a huge industrial complex, now known as PSG Group (Peelamedu Sama Naidu Govindaswami Naidu), Industrial Area, Coimbatore-4. The small workshop which was just a servicing centre to start with, gradually took over the manufacturing of reeling machines, cotton gins, decorticators and filterpresses for oil mills. The initial success encouraged the firm to embark on new ventures. Today the PSG complex manufactures and exports a wide range of lathes, pumps, engine pump sets, motor pump sets, electric motors and milling attachments.

In the year 1972, the firm's export earning was in the neighbourhood of Rs. 0.45 million. The major product group exported relates to pumps, (Rs. 0.33 million in the year). The Saudi Arabian market has been the foremost importer of the product and absorbed nearly half of the total exports of pumps by the firm in 1972. Iraq, Dubai and Kuwait are the other customers of the firm's pump sets. The Federal Republic of Germany and Switzerland are major importers of lathes produced by the PSG group. Lathes were supplied earlier to quite a few other markets including Sri Lanka, New Zealand, United States, Canada and Nigeria. Saudi Arabia is again the leading market for the company's pump sets and motors while Switzerland happened to be a significant importer of their drilling machines.

The firm has ambitious export plans for 1973 and they anticipate to export 2000 numbers of pumps and sizeable quantities of motors and lathes. They are now engaged in exploring the African market in a big way. They are also exploring opportunities for supplying castings abroad.

The manufacturing activities of the PSG complex are organised on a scientific basis and it works as an integrated project of training, development and research to turn out quality products comparable only with the best in the world. A common foundry, tool room, test rig and separate shops for electric motors and pumps, hydraulic machinery, machine tools, I.C. engines and sections for design and development, planning in industrial engineering, inventory and cost control constitute the salient features of the PSG Industrial Institute. Every product that carriers the PSG mark is based on rich experience of over three decades. Competent material and workmanship, rigorous inspection and tests go into its making and it is sufficiently guaranteed for satisfactory performance and durability.

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PSG has the privilege of making the first electric notor in India (1941). As the years passed, the PSG notors picked up popularity overseas. It was again SG that pioneered in developing the first variable peed motor made in India (1959). The firm's motors re now manufactured for 400/440 volts or 230 volts, 0 cycles, A.C. supply, in speeds of 960, 1440 and 2880 .P.Ms in different types like screen protected, totally nclosed, and drip-proof. The present production of notors by the company includes single phase, fractional orse power, capacitor start motors, 1/6 hp to 1 hp; hree phase, squirrel cage induction motors, 1/4 hp to 0 hp; 3-phase, slipring induction motors 5 hp to 30 hp; ariable speed commutator motors, 5 to 8 hp and 6 to 2.5 hp; textile motors such as spinning motors, card notors and loom motors; pole changing motors and lectric sirens.

PSG's pumps are equally catching up the world ver. Every eighth pump in India is now claimed to be PSG pump. Their pumps are widely used for rrigation, sugar, chemical and other industries as also ewage systems. Among the pumps made by the firm re horizontal spindle, vertical split-casting, end suction pto 6 inches, belt driven, with fast and loose pulleys r single pulley with outer pedestal upto 6 inches; lomestic self-priming, single-stage and multi-stage, 1 ich and 1½ inch and double suction, horizontal spilt-asing upto 16 inches.

The PSG complex, apart from ensuring high uality to customers at home and abroad, is also engaged constant research. Each year witnesses the addition f new ranges to its manufacturing capacity. In the urrent year (1973), the firm is to manufacture and narket new products such as electric hoists, domestic nono block pumps, 1 and 0.5 h.p. both centrifugal and entripetal turbine pumps; centripetal mono block umps, hydraulic dynamo motors, 200 hp, 5000 to 10,000 PM; many industrial pumps and diesel generating ets.

The firm is also in a position to offer know-how o foreign countries. It has already offered technical articipation to Sri Lanka for the manufacture of lectric motors, diesel engines and pumps. Saudi Arabia as also sought PSG's assistance to manufacture pumps that country. As it is, nearly one third of Indian ump exports to Saudi Arabia are of PSG variety.

The PSG group has been awarded an Import ubstitution award by Inventions Promotion Board in 1971 for a new product—Generalised Electro-mechanical energy convertor. This machine is to be soon supplied by the firm to Iraq. In 1971-72, the import saving affected by the firm was in the range of Rs. 5 million. Among the products for which import saving has been effected are laboratory equipment for engineering colleges such as peltor wheel and peltor turbine. Recently, gear pumps have also been developed by the firm.

DRY AND STORAGE BATTERIES IN EXPORT STREAM

Export of India - made batteries and accumulators amounted to Rs. 25.57 million in 1971-72 as against Rs. 22.23 million in 1970-71. During the first half of 1972-73 (April - September 72), the exports were of the order of Rs. 14.54 million. Of this, batteries brought in Rs. 7.24 million. Flash light batteries, wet cell primary batteries, parts of primary batteries and other dry cell primary batteries were the items supplied mainly to Sudan, Nepal, Bangladesh, Czechoslovakia, South Yemen People's Republic, German Democratic Republic and Poland. Accumulators (lead and acid type) and other accumulators and parts were the other varieties active in the exports which fetched Rs. 7.29 million. U.S.S.R., Poland, German Democratic Republic and Dubai were the major buying countries.

Among the units engaged in the line who have contributed to the export earning of dry and storage battery industry, M/s. Standard Batteries Limited, Vakola, Santa Cruz. Bombay-55 contributed Rs. 2.7 million to the industry's total foreign exchange earning during the firm's financial year ending June 1972. Besides physical exports, the Bombay firm has developed technical expertise and competence to undertake collaboration jobs in the line abroad. Last year, it entered into collaboration with the Government of Sudan for setting up a battery manufacture plant in that country having a capacity of 50,000 numbers per annum. A similar project has also been undertaken by the firm in Indonesia with the assistance of M/s. Tata Exports Limited, Annie Besant Road, Worli, Bombay for setting up a plant in that country with an initial capacity of 1,50,000 batteries.

The firms' three plants at Vakola and Kajur near Bombay, and at Madras are engaged in the manufacture of storage batteries, battery manufacturing machinery, moulds, battery chargers, batteries for cap lamps and miner's cap lamps. Its engineering division has also developed a battery charger recently.

The total licensed capacity of dry battery industry is of the order of 905 million numbers. The installed capacity at the end of 1971 was about 540 million numbers. It is envisaged to create additional capacity of 470 million numbers and letters of intent have been issued. Production of dry battery cells has also been increasing. It rose to 570 million numbers in 1971 as compared to only 300 million numbers in 1965.

EXPORT OF MANGANESE ORE

Possessing sizeable resources of mineral ores, India is in a position to meet the home demand as well as release surplus for supply to a large number of overseas markets. For instance, during 1971-72, the country earned foreign exchange to the tune of Rs. 140.95 million through export of ores and concentrates of non-ferrous base metals.

Manganese ore and concentrates, the main area of export during the year, earned Rs. 105.98 million and accounted for the maximum share in the overall exports in the line. Among the various grades of ore and concentrates of manganese exported, ferruginous variety brought in Rs. 56.17 million while second grade fetched Rs. 42.18 million. The export value of first grade was Rs. 6.45 million. Quantumwise overseas supply of these ores grades was 661,169 tonnes, 338,165 tonnes and 43,890 tonnes respectively. Japan was the leading buyer for all the grades. It imported ferruginous variety at Rs. 54.75 million (633,900 tonnes), second grade ore at Rs. 22.35 million (206,594) tonnes) and first grade ore at over Rs. 2 million (12,358 tonnes). Canada, Belgium, Korea Republic and France were among other importers.

Adding to the export effort in the line, M/s. Khandelwal Ferro Alloys Limited, 166, Dr. Dada Naoroji Road, Bombay-1, exported ferro-manganese and steel tubes to the tune of Rs. 25 million during the year ending December, 1972.

The Bombay firm's installed capacity for the manufacture of ferro-manganese is placed at 37,0 tonnes while it is of the order of 400,000 tonnes for steel tubes. During the year under review the firm's production value totalled Rs. 116.6 million.

MEDICINES TO WORLD MARKETS

India has emerged as a reputable supplier of a wide range of medicinal and pharmaceutical products to a large number of countries. India manufactured products in the line are being sought by even the most sophisticated countries of the world including U.K., USA and Federal Republic of Germany. During 1971-72, these products brought in foreign exchange to the tune of Rs. 87 million as against Rs. 84.65 million in the preceding year, Rs. 60 million in 1969-70 and Rs. 40 million in 1968-69. During the first half of 1972-73 (April-September 1972), the foreign exchange earning amounted to nearly Rs. 40 million.

During 1971-72, the category of medicaments alone fetched Rs. 59.50 million, accounting for nearly 70 per cent of the entire export earning while the group of opium alkaloids, quinine, vegetable alkaloid salts and other derivatives earned Rs. 11.85 million. Kenya, U.K., Thailand, Sri Lanka, Australia Brazil, Japan, Mexico, Nepal, Nigeria, Arab Republic of Egypt, German Democratic Republic, Iraq, Iran, Kuwait, Malaysia, Uganda and Mauritius were the leading destinations for medicaments while Australia, Sri Lanka, Kenya, Ghana, Jordan, Ireland and U.K. were the prominent buyers for the products in the group of opium alkaloids, quinine, vegetable alkaloids salts and other derivatives.

M/s. Curewel (India) Limited, Bombay, which entered the field of pharmaceutical manufacture a year back, have to their credit export achievement of about Rs. 2 million in 1972-73—the very first year of their operation. Besides, currently they have on hand export orders from many countries including United Kingdom, Federal Republic of Germany and Bulgaria.

The Bombay firm is claimed to be the largest manufacturer in Asia for the production of human gamma globulin and albumin. It has introduced into the Indian market human gamma globulin at a much lower price as compared to the prevailing price for the product in international markets. The firm has active plans to diversify its product range to cover many other pharmaceautical products.

India's pharmaceutical industry made rapid strides in the manufacture of drugs and pharmaceutical products in the last decade. In the organised sector there were 100 units engaged in the line in 1971 and their total production was estimated at Rs. 3000 million during the year. In the entire drugs and pharmaceutical industry, there are more than 2200 units.

EXPORT PERFORMANCE AND POTENTIAL

CASHEW KERNEL EXPORTS UP

India's exports of cashew kernel revealed a high level at Rs. 637.30 million (61369 tonnes) during the first 11 months of 1972-73 (April 72- February 73) outstripping the record exports during the full year of 1971-72 at Rs. 613.32 million (60378 tonnes). In fact, the exports rose to this level from Rs. 274 million (5126 tonnes) in 1965-66, Rs. 427.54 million (50756 tonnes) in 1966-67, Rs. 430.29 million (51039 tonnes), in 1967-68 and Rs. 609-30 million (63661 tonnes) in 1968-69. However, after registering decline at Rs. 574 million (60625 tonnes) in 1969-70 and Rs. 520.66 million (50284 tonnes) in 1970-71, the exports rose sharply during 1971-72 at Rs. 613 million.

Directionwise, during the period under review, American zone continued to be the foremost importing region which absorbed worth Rs. 279.80 million (26767 tonnes). U.S.A., the topmost buyer in the region purchased worth Rs. 220.89 million (20479 tonnes). Canada was the next best destination having bought worth Rs. 58.90 million (5287 tonnes).

The East European zone constituted the next best region for sizeable intake. It purchased 26197 tonnes valued at Rs. 257.76 million. U.S.S.R. with an intake worth Rs. 230 million (23067 tonnes) was the leading market, followed by German Democratic Republic at Rs. 13.82 million (1898 tonnes) and Czechoslovakia at Rs. 8.10 million (Rs. 744 tonnes). Rumania, Bulgaria and Hungary were prominent among other buyers.

With U.K. as the leading buyer at Rs. 16.76 million (1631 tonnes), the West European zone's purchases were valued at Rs. 43.91 million. Netherlands, the next important market bought worth Rs. 10.76 million (971 tonnes), followed by Federal Republic of Germany at Rs. 8.62 million (1004 tonnes) and France at Rs. 4.12 million (408 tonnes). Cyprus, Switzerland, Italy and Sweden were the other markets.

South East and Far East Asian zone's intake amounted to Rs. 36.20 million (2308 tonnes). Japan was the foremost buying country having absorbed worth over Rs. 21 million (1854 tonnes), followed by Hong Kong at Rs. 10.91 million (969 tonnes) and Singapore at Rs. 3.96 million (359 tonnes).

Among the other regions, offtake of Oceanic zones was of the order of Rs. 13.23 million (1172 tonnes, of which Australia alone accounted for Rs. 12.79 million. West Asian zone absorbed worth Rs. 6.38 million (582 tonnes).

Alongside the cashew kernels, the cashewnut shell liquid too was supplied abroad to the tune of Rs. 4.66 million during the period under review of 1972-73. U.S.A., Japan, Yugoslavia and Rumania were the prominent buyers.

BOOST IN TOBACCO EXPORTS

India's exports of unmanufactured tobacco reached a peak level of Rs. 631.67 million during 1972-73, registering nearly 50 per cent increase over the export value of the preceding year at Rs. 422.46 million. Quantumwise, 92454 tonnes were supplied abroad as against 57288 tonnes.

During 1972-73, Eastern Europe constituted the foremost buying region having absorbed worth Rs. 326.70 million (39582 tonnes) as against Rs. 174.87

million (21823 tonnes) in 1971-72. Among the prominent purchasing countries in the region, U.S.S.R. topped the list as in the preceding year, having imported worth Rs. 302.91 million (34801 tonnes). In 1971-72, its purchases were volued at Rs. 152.82 million (18808 tonnes). Czechoslovakia too retained its position of the second important destination by importing worth Rs. 14.80 million (1596 tonnes). Bulgaria and Hungary which did not purchase in the preceding year (1971-72) emerged as other buyers in 1972-73. Their purchases were valued at Rs. 6.36 million (1725 tonnes) and Rs. 2.62 million (1460 tonnes) respectively.

With Bangladesh, emerging as the leading buyer at Rs. 87.22 million (20243 tonnes), South and South East Asia continued to be the second best region which bought worth Rs. 138.75 million (27015 tonnes) as against only Rs. 45.69 million (6398 tonnes) in the preceding year Japan was the second important market which imported worth Rs. 43 million (4231 tonnes), followed by Nepal, Singapore and Indonesia.

United Kingdom was the one more area of significant offtake which alone purchased worth Rs. 127 million (14653 tonnes). However, as compared to its purchases in 1971-72 at Rs. 158 million (17671 tonnes), its intake during the year under review recorded considerable shartfall.

The intake values of other regions during 1972-73 were : Western Europe Rs. 21.16 million (4723 tonnes); Africa region Rs. 12.22 million (4671 tonnes) and West Asia Rs. 5.45 million (1718 tonnes).

JUTE MANUFACTURES EARN MORE

Among India's traditional export products, Jute manufactures are being absorbed by the world markets in larger quantities. Their export earning during the first half of 1972-73 (April-September 72) amounted to Rs. 1333.76 million, registering an impressive rise of over 15 per cent over the export value of Rs. 1163.24 million earned during the comparable period of the preceding year.

Woven jute fabrics constituted the major area of export during the period under review of 1972-73, having fetched Rs. 928.45 million. Among a wide range of varieties supplied abroad, hessian cloth brought in Rs. 485.52 million (107327 tonnes) while carpet backing cloth earned Rs. 423.24 million (80464 tonnes). The export value of other items in the category was : sacking cloth Rs. 10 million; narrow fabrics Rs. 7.13 million and jute canvas Rs. 2.50 million.

USA (Rs. 132.24 million), USSR (Rs. 101 million), Iran (Rs. 43.55 million), Canada (Rs. 35.48 million), Turkey (Rs. 32.77 million), Arab Republic of Egypt (Rs. 25.72 million), U.K. (Rs. 25.62 million), Australia (Rs. 20.47 million) and Bulgaria (Rs. 16.48 million) were the prominent buyers of hessian cloth while USA (Rs. 319.16 million), Canada (Rs. 32.07 million), Japan (Rs. 22.96 million), Australia (Rs. 17.80 million). Czechoslovakia (Rs. 6.65 million). New Zealand (Rs. 4 million) and U.K. (Rs. 3.33 million) were the leading markets for carpet backing cloth. Turkey, USA, Arab Republic of Egypt, and U.K. were the important purchasers of sacking cloth and USA, UK. Australia and Canada were the major buyers of narrow fabrics.

Made-up articles of jute constituted the second best category which netted Rs. 396.80 million. Jute sacking bags was the principal item of export in the category, which earned Rs. 150 million (47459 tonnes). Arab Republic of Egypt (Rs. 35.46 million), Zambia (Rs. 12.58 million), Swaziland (Rs. 10.77 million), Syria (Rs. 8.10 million), USSR (Rs. 6.89 million), Tanzania Republic (Rs. 6.69 million) and Rumania Rs. 5.90 million) were the major markets. Jute hessian bags, yet another item brought in foreign exchange equivalent to Rs. 130.84 million (27650 tonnes). USSR was the leading destination with an offtake worth Rs. 98 million (20474 tonnes), followed by Syria at Rs. 7.18 million (1661 tonnes), Kuwait at Rs. 4.18 million (972 tonnes), Bulgaria at Rs. 3.93 million (856 tonnes) and Indonesia at Rs. 3.63 million (690 tonnes). The export earning of other items was : Jute baggings of raw cotton Rs. 71.48 million; jute tarpaulins Rs. 17.49 million; jute wool sacks Rs. 18 million; other jute bags and sacks Rs. 3.85 million; jute corn sacks Rs. 3.39 million and tarpaulin tents Rs. 1.70 million. USSR, USA, New Zealand, Czechoslovakia, German Democratic Republic, Saudi Arabia, Bulgaria, Hungary and Belgium were the prominent importing countries.

Floor coverings, tapestries of jute was still another category active in the export trade. Linoleums on jute base, mats, mattings of spun jute and other arpets of jute (except knotted) were the main items upplied abroad to fetch Rs. 5 30 million. The rincipal markets for these items included Czechoslo-akia, Bulgaria, Australia, Sudan and Thailand.

NCREASE IN EXPORT OF RUSHED BONES

The export value of crushed bones supplied abroad y India increased to Rs. 51 million in 1971-72 from s. 45.74 million in 1970-71. In the first six months f 1972-73, the export earning was Rs. 30.60 million.

The major importers of crushed bones are U. K., France, Belgium, Bulgaria, German Democratic epublic, Japan and Rumania. In the first six months f 1972-73, U. K. imported 12.26 million kg. valued at s. 9 million and France 4.98 million kg. at about s. 2 90 million. Purchases by Belgium amounted to .96 million kg. at a value of Rs. 3.62 million, while those of Bulgaria were 4.60 million kg. at Rs. 4.60 million. The offtake of German Democratic Republic and Japan was 4.40 million kg. and 3.38 million kg. at s. 4.40 million and Rs. 3.38 million respectively. umania also brought one million kg. at a price of s. 73,196.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PROGRESS AT COCHIN SHIPYARD

The construction of the first ever ship at Cochin Shipyard is expected to start by the end of 1974. The planning and design stages of the Shipyard are almost complete. The infrastructural work including the laying of roads, arrangements for electricity supply and reclamation of low-lying land is almost over. Contracts for docks have already been awarded and the major machinery and parts, required for the Yard have also been ordered for.

The Cochin Shipyard which is expected to go on swing by 1975 is to have two docks, one for building ships and the other for ship repairs. The building dock has a capacity of 85,000 DWT per ship and the Repair dock about 100,000 DWT. The Shipyard is targetted to produce two ships every year.

M/s. Mitsubishi Heavy Industries of Japan are providing technical assistance for the shipyard construction. For building ships at the Yard, M/s. Scott Lithgow of United Kingdom is to provide technical assistance in the form of training of Cochin shipyard personnel at the U.K. firm's yard at Port Glasgow; supply of drawings, specifications and technical documentation and stationing of consultants at Cochin to provide guidance in design and building of ships. The first series of the ships to be built will be a 75000 DWT Panamax bulk carrier of the same class and design as the two ordered by M/s. Shipping Corporation of India on the U.K. firm. The Cochin Shipyard is to conclude a formal contract with the U.K. firm soon to this effect.

The Japanese collaboration for shipyard construction was formerly agreed to through an agreement signed in August 1970. The Agreement will be up to 1975. The collaboration will include supply of design for building of docks.

M/s. Tarapore & Company, Madras have been awarded the work of construction of building and repair docks and three quays at a cost of approximately Rs. 220 million have already commenced the work at site. Excavation of earth in dock sites is in progress. Consequent on the decision taken by the Cochin Shipyard management to build larger ships than originally anticipated, it became necessary to revise some drawings to provide for the extension of the building dock from 246 to 255 metres and repair dock from 255 to 270 metres. The revision due to the extension of docks is to be undertaken by the Shipyard itself.

Orders have already been placed in Japan for approximately 4500 tonnes of steel required for the construction of the Shipyard. Orders have also been released for six groups of imported equipment at an estimated cost of Rs. 31 million and indigenous equipment at a cost of Rs. 62 million. The equipment orders include sophisticated shipyard equipment like Electro-Print-Marking Machine, one side Welding

Equipment, 500 Tonne Frame Bender, Semi Gantry Crane, Shot Blasting Equipment, 1200 tonne Hydraulic Press, Horizontal Boring Machine and material testing equipment.

The Shipyard is to be situated in an area of 680,000 square metres. The entire area is low-lying and has to be reclaimed to bring it to the level of plus 3 metres. The task of reclamation proposed in three stages is indeed satisfactory.

The total project value of the shipyard is estimated at about Rs. 500 million of which the import content will be of the order of Rs. 60 million. The anticipated net import substitution will be in the range of Rs. 80 to 90 million per year. By way of ship repairs, the Shipyard at its full capacity, is expected to earn a revenue of about Rs. 40 to 45 million. every year.

The Cochin Shipyard is thus taking shape. It will soon be one more prominent temple of industrial progress in India.

SPOTLIGHT ON ELECTRONICS CORPORATION

India's successful endeavour in the production of sophisticated electronic equipment, employing modern technology and expertise have placed the country in the group of those few nations which are on the forefront in this line of manufacture. In this context, the contribution of M/s. Electronics Corporation of India Ltd. (ECIL), Hyderabad, in projecting India's image abroad as a competent manufacturer of sophisticated electronic items is needed noteworthy.

Intended originally to produce mainly nuclear instruments for monitoring and detecting radiation sources, ECIL's Nuclear and Allied Division progressively and steadily diversified its product range to include industrial and test instruments, medical instruments, both diagnostic and therapeutic, agricultural and geological instruments. Fully equipped with necessary technical capability, the Corporation recently took up the manufacture of communication sets, fully transistorised T.V. sets, both commercial and close circuits. It has lately received a licence to manufacture 20,0 TV sets per year. Based initially on the development undertaken at TATA Institute of Fundamental Research, the Corporation is now poised to manufacture microwave components and test instruments.

Alongside the progress made in the manufacture of professional grade components, the Corporation has developed ceramics and rectilinear trimpots and 5 amp silicon rectifiers having application in industrial and entertainment fields and a variety of glass to metal seals. In the area of servo – technology, it has taken up development of mico-motors and gyros. Besides, undertaking the main task of supplying control panels and instrumentation to Atomic power stations in the country, ECIL's power Reactor Instrumentation Division is soon to enter the field of process control in Industry and together with the computer Division of the Corporation, would produce fully integrated control system packages to meet the custum needs. The Corporation also undertakes manufacture of small and medium computers to meet present demand for this sophisticated item. It has taken up the manufacture of several types of microwave antennae based on the know-how developed in the Department of Atomic Energy. At domestic level, contracts were concluded between the Corporation and the Overseas Communication Service for putting up a 97′ diameter antenna at Lacchivala near Dehradun in U.P. for a terrestrial station for satellite communication and another with the Ministry of Defence for a large antenna system. Besides this, the Corporation is soon to undertake manufacture of a Defence Store.

Behind all these multi-faced manufacturing activities of the Corporation, the objective is to take up the manufacture of those particular items which are being imported in the country, so that indigenous capability is built up, leading the country nearer to the goal of self-sufficiency and self-reliance.

The Corporation has to its credit introducing some new items in its production stream during 1971-72. These include digital computers, TDC 12, the 50 MHz fully transistorised modular plug in oscilloscope, the 400 channel analyser, the CCTV system, the ultrasonic flaw detector and some medical instruments. It is also making 'E' type excitation control equipment designed by the Central Electronics Engineering Research Institute (CEERI), Pilani, Rajasthan for incorporation by the Heavy Electricals India Limited, in the electrical system supplied by them to the Diesel Loco Works, Varanasi for installation in Diesel Locomotives. It has also received approval of Defence Inspectorate for tantalum capacitors and synchors. Earlier during 1970-71, some new instruments produced by the Corporation were : scintiscanner and ronograph, the highly sophisticated medical instruments produced for the first time in the country, amplifiers and pulse generators, wire bound resistors, rectilinears and circular trimpots, epoxy transfer moulded rectifiers and boron coated detectors. Besides, it has also introduced analog and digital computers of entirely indigenous design into the market as well as the first small AC gear motor.

EXPANSION PLANS FOR CAUSTIC SODA

Nine new caustic soda manufacturing units adding upto a total annual capacity of 297,000 tonnes, may be set up in West Bengal, Maharashtra, Gujarat, Uttar Pradesh, Tamil Nadu and Kerala under Letters of Intent issued by the Ministry of Petroleum and Chemicals, Government of India. Each unit would have a capacity of 33,000 tonnes.

The present annual installed capacity of caustic soda in the country is 0.43 million tonnes distributed among 29 manufacturing units. The capacity approved so far through industrial licences and Letters of Intent is about 0.27 million tonnes. The fresh Letters of Intent now issued by the Indian Government would be in addition to the approved capacity and would mark a step towards eliminating shortages of this basic inorganic chemical, required for the manufacture of such products as pulp and paper, aluminium, rayon, vanaspati, textiles and soap.

A 33,000 tonne new unit and three expansion projects with a total capacity of 15,100 tonnes were commissioned in 1972. One expansion project of 8,665 tonne capacity was commissioned in February 1973. Six more expansion projects with a total capacity of 68,800 tonnes per year are likely to be completed during the current year.

The revised Fourth Plan (1968-69—1973-74) target for caustic soda production is 0.44 million tonnes. Production of caustic soda during 1972 was estimated at about 0.4 million tonnes as against 0.38 million tonnes in 1971 indicating an increase of 4 per cent.

KORBA FERTILIZER PLANT

The foundation stone of the Korba Fertililizer Plant in Madhya Pradesh has recently been laid. Like the other two large-scale coal based fertilizer plants being set up at Talicher and Ramagundam, the Korba Plant will have an annual capacity of 459,000 tonnes of urea, a high analysis fertiliser equivalent of 229,000 tonnes of N. Estimated to cost Rs. 1200 million, including a foreign exchange element of Rs. 270 million, the project will take about two and a half years to complete and is expected to be commissioned by 1976-77. It has been experienced that normally a fertiliser plant produces only about 50 per cent of its installed capacity in the first year of its commissioning, the production performance increasing to 75 per cent in the second year and to about 90 per cent in the third and subsequent years. On this basis, Korba is likely to achieve by 1978-79 a 90 per cent capacity performance or more which would be about 206,000 tonnes of N.

Value-wise, the Korba Project is designed to produce fertilisers worth Rs. 250 million every year. It will thus directly save the country's foreign exchange expenditure to that extent on import of fertilisers. It will also lead to boost in agricultural production resulting in an indirect saving of about Rs. 1500 million in the import bill for foodgrains.

The project is being set up under the auspices of the Fertilizer Corporation of India who are entrusted with the project in all its aspects including planning, designing, engineering procurements, supervision of construction, commissioning and operation. The Corporation will accomplish the assignment with the know-how and expertise already gained or negotiated by it.

The project has collaboration with Koppers of West Germany for coal gasification process and with Montedison of Italy for ammonia and urea process. Total coal gasification of pulverised fuel at atmospheric pressure using 98 per cent purity oxygen and steam would be based on Koppers-coal gasification process. The gasification will be carried out in three gasifiers. The pulverised fuel will be picked up by oxygen and steam mixture admitted through nozzles at the end of the gasifiers. The mixture of raw gas and unreacted steam will flow upward and agglomerates of ash particles that are too heavy to remain suspended will fall into dust legs in molten condition. The gases would pass through a waste heat boiler and disintegrate into a gas holder at atmospheric pressure. The raw gas will then be compressed to the purification pressure. Sulphur and Carbon-dioxide will be removed by low temperature methanol scrubbing. This process will also be employed in FCI projects at Talcher, Ramagundam, Haldia, Nangal Expansion and Sindri Modernisation. The carbon monoxide conversion will be carried out by utilising high temperature shift conversion catalyst manufactured by the Fertilizer Corporation of India Ltd. The removal of carbon monoxide will be done by liquid nitrogen wash. The synthesis gas will be compressed in a centrifugal compressor driven by steam turbine and ammonia synthesis carried out in a convertor.

Salient features of the Korba plant are that the process schemes chosen are simple, rugged, versatile and flexible to accommodate variations in feedstock characteristics or tide over temporary disturbances in operating conditions. These processes incorporate as much indigenous material as can be procured or manufactured in India. In other words, improvisations and adaptations have been made to the extent possible. The available heat from one process will be utilised in the other process sequence to minimise investment required for the quantity of energy. On the whole the pocesses would yield maximum for its investment and operating expenses.

The Korba Fertilizer project has advantages of economy of scales and many other side advantages. The factory and the coal mines are contiguous and coal is available on the spot to minimize the transportation problems. The foreign exchange on account of raw material for production of the fertilizers will be nil. The National Coal Development Corporation has already built up a large production capacity of a million tonne coal per annum on Surkachar mines with an extensive investment of Rs. 90 million. These mines would serve as captive mines for the fertilizer project. The entire coal requirement will be met from the Surkachar block mines. Power requirement of about 50 MW is available almost next door from Kobra Thermal Power Station. Water requirement of about 18 million gallons daily will be available from the nearby Hasdeo river. There is no problem of effluent and ash disposal. Sufficient low level area in the vicinity along the Ahiran river can be used for ash dumping etc. Sand is also available from the Hasdeo river. Salwood is abundantly available in the surrounding areas. Cement factories and quarries for stone chips are also located in the proximity of the factory site. Most of the skilled and entire unskilled labour can be employed locally. Korba itself has an industrial training institute which can partly meet the skilled labour requirement. Further trainning would be given to the selected employees under the existing training programmes and the facilities already available in the Fertilizer Corporation of India. An amount of R. 2 million has been earmarked for construction of a Training Centre at Korba.

Besides generating score of feeder and ancillary industries providing employment potential, the plant at Korba will provide direct employment to about 2000 people in the industrial sector of the country's economy. The total number of people likely to benefit directly or indirectly from the earnings of the project is estimated to exceed 20,000 people. With an annual consumption of 1 million tonnes of coal for process and steam generation, the project will go a long way to revitalize the country's coal industry in which was recently experiencing a slump due to reduced offtake on account of dieselisation and electrificaion of railways and industry in the country. Additionally it will help to boost agricultural production in the country.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

KNOW-HOW FOR WHITE OIL DEVELOPED

A complete technical know-how for the manufacture of white oil of various grades has recently been developed by the Indian Institute of Petroleum (IIP), Dehra Dun. White oil is colourless and transparent liquid made from lubricating oil fractions of crude.

It is used for the manufacture of petroleum jelly, imports of which are banned. The current demand of petroleum jelly is about 5,000 tonnes per year, which is expected to double within a couple of years. It is estimated that the cost of producing per tonne at a 1,000 tonne unit size plant would be about Rs. 2,000.

A plant for the manufacture of white oil, with 10,000 tonnes per annum capacity, using the IIP technology, is being set up in Madras.

The National Research Development Corporation, 61, Ring Road, Lajpat Nagar III, New Delhi-110024 is commercialising the technology of the developed product.

LOW COST SUBSTITUTE FOR PLYWOOD AND FIBRE BOARDS

The Central Building Research Institute (CBRI), Roorkee has recently developed a method for casting fibrous gypsum plaster board which is a commercial lining material used in Australia and Newzealand and is known for its high thermal insulation and fire resisting properties.

Fibrous gypsum plaster-board consists of 12 mm thick board of set gypsum plaster reinforced with organic fibre. It is low cost substitute for plywood and fibre boards of the insulating callotex type used for light weight partitions and false ceilings. This may also be used for surfacing in place of plaster for dry and faster method of construction.

In the process, a steel mould is laid over a concreate casting table having smooth troweled surface. Calcined plaster is mixed with water to form uniform slurry. The slurry is poured and evenly spread in the mould to 4 mm thickness. Teased sisel fibre, about 250 grams per square metre, is then spread over the surface. The fibre near the edge is pressed into the plaster by hand. The remaining slurry is then poured, levelled and allowed to set. The product is demoulded after 2 hours and dried in wooden racks in air.

At present, the demand is being met by fibre board, A.C. sheets etc., which are quite expensive. This product will have sufficient demand for use in public buildings where ceiling of light weight etc. are required.

A pilot plant of the capacity of 10 sq. m. per day, plaster-board has been working in the CBRI and about 100 plasterboards, each of the size 120 x 60 cm. x 12 mm, have been made. These boards have been used for ceiling in a model house and their performance has been found satisfactory.

The plasterboard complies with Australian Standard Specification A.S. Nos. A 44-1950, CA 20-1950.

The main raw materials required are: Gypsum plaster purity less than 75 per cent; Sisel fibre - first grade and Stripping agent colourless.

All these are available indigenously. The Gypsum plaster is a cheap material and is obtained by calcining ground gypsum either in an open mild steel sam or in an enclosed steel kettle. The design of the kettle is available with CBRI.

It is estimated that 1200 million tonnes of reserves of gypsum are available in the country. Out of it, 1000 million tonnes are in Rajasthan alone. The Sisel fibre found satisfactory for reinforcement is available for Nildamgri Sisel Estate, Sambhalpur, Orissa. A small quantity is also required for stripping agent for plasterboards.

A standard transverse bending test is performed by supporting 30x30 cm. specimens of plasterboard on 25 cm. space and loading at the centre at a rate of 5 kg. per minute. The minimum breaking load should be 34 kg.

NEW TANNIN EXTRACT

A new tanninextract called "Tannin extract L" has been developed by the Central Leather Research Institute (CLRI), Madras 20, using wattle bark, cashew testa, babul bark and cutch extract. This has been found to be a good substitute for the imported wattle extract which has to be presently imported to the tune of 20,000 tonnes a year at a cost of Rs. 6 million on account of short indigenous supply.

The next extract powder has been produced in a pilot plant of capacity of 50 kg. per day and has the specifications prescribed by Indian Standards Institute. The tanners who have used the new product, have given favourable report.

The process developed by CLRI consists of size reduction, leaching, bleaching, evaporation and spray drying.

Main items of raw materials required in the process are wattle bark, cashew testa and babul bark. All these are indigenously available.

Major items of machinery required are disintegrator, toothed rool crusher, leaching vats, triple–effect evaporation spray drier and boiler. All the equipment can be easily fabricated indigenously by a good engineering firm.

Most of the products have undergone severe commercial tests and found very satisfactory.

EDIBLE GLUE DEVELOPED

Considerable wastage occurs during the processing of casings as the small pieces cannot be used. In order to reduce such wastage, the Central Leather Research Institute (CLRI), Madras, has successfully prepared 'Edible Glue' which reduces this loss by joining the smaller pieces to get bigger lengths.

Using Ball mill, sieve shaker, rotary shaker etc. which may be already available in any existing firm making leather auxiliaries and with indigenously available raw materials the glue can be easily prepared without much cost.

Even though the present demand for the product is very low, with the increase in the production of ready-to-wet sausage casings, the demand for the product will be much more. Samples of the glue prepared by the CLRI have been tested comprehensively for joining the dry to wet sausage casings and the results are highly satisfactory. The consumers who took the samples have reacted favourably to the new product.

MORPHOLINE FROM DIETHANOLAMINE

The National Chemical Laboratory (NCL), Poona, has undertaken the investigations for the manufacture of morpholine from diethanolamine. Morpholine is used as an intermediate for rubber chemicals and as a corrosion inhibitor. Its derivatives are useful in textile industry as softners and optical brightners.

The exact figures for demand or the production in the country are not available. However, it is reported that about 30 to 40 tonnes per annum of this chemical are being imported into the country. The future demand has been put a 800 tonnes per annum.

The batch process involves straight forward dehyderation of diethanolamine-Morpholine in aqueous solution is recovered by extractive distillation accompanied by azeotropic separation. The laboratory investigations by NCL have been carried out at 400 grams per batch scale. NCL product compares very well with the imported one.

Diethanolamine is the major raw material required for the production of morpholine. It has to be imported for the time being, but is going to be manufactured in the country in near future by a firm in Bombay. The other raw materials e.g. oleum, sodium hyroxide and solvent are indigenously available.

The major items of plant and machinery required are jacketted kettle with stirrer and reflux condenser (glass lined), jacketted vessel (M.S.), distillation assembly with azeotrope separator (S.S.), storage tanks (M.S.), centrifugal pumps (M.S.C.I. & P.V.S.). All these can be fabricated indigenously.

The laboratory has assumed 300 tonnes per annum as the optimum plant capacity for this product. Total capital outlay for a plant of this size is estimated at Rs. 2 million (Rs. 0.6 million for land, building and plant and machinery and Rs. 1.4 million as the working capital).

FACTS ON 'FACT'

Having started its manufacturing activity on a modest scale in 1947 with an initial annual capacity of 50,000 tonnes on ammonium sulphate, M/s. Fertilizers and Chemicals Travancore Limited (FACT), Udyogamandal, Alwaye witnessed rapid development in production and product diversification year after year. It has successfully taken up a series of expansion programmes and stands out today as a prominent producer of nitrogenous and phosphatic fertilizers as also a wide range of fine chemicals. The firm has significantly contributed to design development and engineering know-how of chemical and fertilizer plants and succeeded in evolving many a new process for producing various chemicals that are available to the growth of Indian industry.

The first stage expansion of the Alwaye firm aimed at doubling its nitrogen capacity and introduced for the first time in India a new complex fertilizers, namely, ammonium phosphate. Under the first stage expansion scheme, the firm also established a phosphoric acid plant and a plant capable of producing ammonium phosphate of 16 : 20 grade. In the second stage expansion, the firm replaced the firewood gasification plant with oil gasification process using raw naphtha as feedstock. As a result of the installation of the new plant, FACT's capacity increased to 30,000 tonnes of nitrogen and 15,000 tonnes of P_2O_5. The third stage expansion further made the nitrogenous fertilizer capacity to 70,000 tonnes and phosphatic capacity to 33,000 tonnes. An interesting feature of the third stage expansion programme was the installation of 300 tonnes a day ammonium sulphate plant based on the process know-how developed by the firm itself for the conversion of by-product gypsum. The fourth stage expansion programme of FACT involving an outlay of Rs. 50 million has just been completed. This programme was conceived on the basis of replacing the electrolytic cells and providing other ancillary facilities required to raise nitrogen capacity upto 90,000 tonnes and phcphatic capacity upto 45,000 tonnes. A new ammonia plant has also been commissioned under the fourth stage. An ammonium phosphate plant with a capacity of 150 tonnes per day is also ready and is completely designed and engineered by the firm's engineers themselves. The fourth stage expansion programme of FACT is to take a total investment of Rs. 270 million.

The patten of existing production capacity for selected chemicals and fertilizers in the FACT's complex includes 200,000 tonnes of ammonium sulphate, 135,000 tonnes of ammonium phosphate, 50,000 tonnes of superphosphate, 25,000 tonnes of ammonium choloride and 350,000 tonnes of NPK mixtures. In 1971-72, actual production of ammonium sulphate was of the order of 130,125 tonnes while that of ammonium phosphate was 59,630 tonnes, superphosphate 16,275 tonnes, ammonium chloride 97,820 tonnes, sulphuric acid about 2000 tonnes, oleum 1860 tonnes and ammonia 60,840 tonnes. The production of NPK mixtures in 1971-72 was around 110,000 tonnes and that of nitrogenous fertilizers was 50,000 tonnes and ammonia fertilizers 15,000 tonnes.

The Cochin Division of FACT at Ambalamedu, near the Cochin Refineries is designed to produce 33,000 tonnes of urea per year and the plant is expected to soon go on stream.

Besides consistent product expansion and diversification, FACT's contribution to the fertilizers and chemical industry in India relates to its development of a separate organisation for the design and engineering of chemicals and fertilizers and for evolving new processes for producing various chemicals that are vital to the industry. A new autonomous Division under the name FACT Engineering and Design Organisation (FEDO) was formed to take up process design, equipment design, power system design, control system design, architectural and structural design, project planning and development, purchase and inspection, installation and testing and commissioning. FACT has already entered into collaboration agreement with M/s. Power-Gas Corporation Limited of the U.K. and E.I.C. of Luxembourg of West Germany and Wellman Power Gas of U.S.A. for know-how relating to fertilizers and chemical industry.

Besides, taking up mojor jobs within India, such as the Phase I and II of Cochin Fertilizer Project, 360 TPD phosphoric acid plant at Sindri, 300 TPD sulphuric acid plant for Travancore Titanium products etc. FEDO has received the Indian Chemical Manufacturers' Association award for export of know-how for building up an ammonium chloride plant in Brazil.

FEDO has also several successful research programmes to its credit. For example, it has developed

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the process for the manufacture of ammonium sulphate from by-product gypsum, manufacture of sodium flouride, calcium silicate, synthetic cryolite and urea phosphate.

FACT Engineering Works (FEW), another division of FACT, caters to the specialised needs of chemical and fertilizer industry in the fields of fabrication of plant and equipment as well as structural and erection works. FEW is capable of fabricating specialised items like gas holders and tanks, primary and secondary cells, heat exchangers, kettle plates and pressure vessels, mixers, impellers and agitators. It also undertakes structural works and erection at site including that of columns, beams, casings, platforms, gratings and fabrication and laying of pipes of various requirements particularly those required by chemical industry.

FACT has succeeded in exporting ammonium chloride to overseas market. In 1968-69 it has successfully entered the market for the product and earned Rs. 315,000 (485 tonnes). In 1970-71, the exports touched 1120 tonnes and secured Rs. 0.86 million. The countries to which these exports were effected include Arab Republic of Egypt, Uganda, Kenya, South Vietnam and Sudan. Besides physical exports, FACT also supplied ammonium chloride plant with a capacity of 3,000 tonnes per annum to Brazil, on the process know-how and basic design and engineerings upplied by them. The Brazilian plant was successfully commissioned and started production in early 1971.

FACT has been playing a significant role in spreading fertilizer-consciousness in the Southern States of India. It has about 7500 sales outlets and the growth of its marketing organisation has been enormous. The sales turnover of the company rose from a mere Rs. 23 million in 1959-60 to Rs. 317 million in 1970-71. With growing research and development department and competent design and engineering organisation under its aegis, FACT has taken up the challenge to achieve self-reliance. It has already made a mark in physical exports and overseas supplies of know-how, helping co-developing countries in this line of production. ☐

Attention

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POWER CONSORTIUM EARNS FOREIGN EXCHANGE

The Indian Consortium for Power Projects Pvt. Ltd., New Delhi, has improved its foreign exchange earning from Rs 0.75 million in 1971-72 to Rs. 4.35 million in 1972-73. The Consortium hopes to earn gross foreign exchange of a value of Rs. 10 million during 1973-74 which will form about 27 per cent of India's total exports of power machinery and distribution equipment.

The Consortium has already earned the appreciation of Tanzanian Electric Supply Company for completing a contract of Rs. 2.85 million ahead of schedule to the entire satisfaction of the customer.

In view of the very nature of the job undertaken by the Consortium involving execution of contracts for power projects which extend over long periods of 1-5 years, there is an inherent time lag between the securing of contracts and their completion. The contracts secured in the very early stages of the operations of the Company have now started yielding results. The foreign exchange earning for the Consortium amounted to no less than 2 per cent and 11 per cent in 1971-72 and 1972-73 respectively of the total export earnings of India from the relative categories of power equipment.

The order-book position of the Consortium has been improving year after year and the total value of the contract already secured during 1972-73 stands at over Rs. 17.3 million with further orders of over Rs. 15 million in the offing including Rs. 5 million worth of export orders, according to the Annual Report of the Ministry of Industrial Development for the year 1972-73.

During 1972-73, the Consortium has diversified its activities by undertaking purely erection contracts for large thermal power stations. The Company expects to undertake more jobs of this type in the near future with the objective of not only making a sizeable contribution to efficient and speedy power development in India, but also to build up a strong base in the country for enabling more active participation in export tenders for power projects abroad.

TURNKEY ORDER IN COUNTERS

India's technical ability in the manufacture of a large range of instruments and appliances is well recognised abroad. The production range covers almost all kinds of instruments such as scientific, medical, optial, measuring and controlling instruments and apparatus. The industry is capable of satisfying the home demand as well as leave sizeable surplus for exports. The foreign exchange earning of these instruments is growing from year to year. From merely Rs. 7.06 million in 1968-69, the exports rose to Rs. 8.60 million in 1969-70, Rs. 14.22 million in 1970-71 and further improved to Rs. 16.50 million in 1971-72. Even during the first half of 1972-73 (April-September 1972) the exports amounted to Rs. 12.18 million as against Rs. 7.58 million during the corresponding period of the preceding year. U.S.S.R., U.S.A., U.K., Nepal, Iraq, Vietnam, Sudan, Iran, Spain, Canada, Philippines, Arab Republic of Egypt and Yugoslavia are the prominent markets. Besides effecting physical exports, the industry has lately entered the field of even undertaking turnkey project jobs abroad.

Recently a turnkey project order for the manufacture of sophisticated Gieger-Muler-counters has been bagged by the State-owned M/s. Electronics Corporation of India (ECIL), Hyderabad from the Arab Republic of Egypt. The order was placed by the International Atomic Energy Agency as a part of its programme to aid Arab Republic of Egypt in peaceful uses of nuclear energy. The counters are delicate and complex equipment used mainly for locating radioactive deposits. They provide immense help in the geological prospecting of uranium, thorium and nuclear gauging for determining molten glass or iron in the respective industries.

ECIL's production range includes a large number of sophisticated electronic based items such as nuclear instruments, industrial and test instruments, medical instruments, agricultural instruments and geological instruments. Besides instruments, they also manufacture communication sets, fully transistorised TV sets, microwave components and test equipment. In addition, they have to their credit introduced some new items in the market in recent years.

India-manufactured counters are emerging as promising items of exports in recent years. During 1971-72, the export value of metres and counters (electric and non-electric) amounted to Rs. 542,210. USA and UK are the main markets for electric counters while Vietnam Republic, Sri Lanka, Saudi Arabia, Japan, Burma and Switzerland were the leading destinations for metres and counters (non-electric).

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ELECTRICAL EQUIPMENT ON EXPORT STREAM

The rising exports of India-manufactured electrical machinery, apparatus and appliances amply prove the superior quality of these products. India, in recent years, has emerged as a dependable supplier of these items to a broad range of overseas markets covering developing as well as developed ones. During 1971-72, the exports in the line totalled Rs. 187 million. In fact, the exports registered consistent growth in recent years, Rs. 132.80 million in 1968-69, Rs. 145.53 million in 1969-70 and Rs. 161.00 million in 1970-71. During the first half of 1972-73 (April–September 1972), the exports amounted to Rs. 125 million.

During 1971-72, equipment of distributing electricity earned Rs. 54 million while the group of electrical power machinery brought in Rs. 47.5 million. Telecommunication apparatus netted Rs. 30 million and domestic electric equipment fetched Rs. 15 million and other electrical machinery and apparatus Rs. 39 million.

The break up of exports during the first half of 1972-73 (April–September 1972) was : equipment for distributing electricity Rs. 37.90 million; domestic electric equipment Rs. 18.10 million; electrical power machinery and switchgear Rs. 27.84 million; telecommunication apparatus Rs. 15.32 million and other electrical machinery and apparatus Rs. 25.85 million. U.S.S.R., Kuwait, U.K., Singapore, Sudan, Poland, Australia, Bulgaria, Sri Lanka, Saudi Arabia, Czechoslovakia, Nepal and U.S.A. were the leading markets.

M/s. Electric Construction and Equipment Company Limited, 9, Kaliprasanna Singhee Road, Cossipore, Calcutta-2 one of the manufacturers and exporters, of a wide range of electrical equipment, have to their credit export performance to the tune of Rs. 1.72 million during the year ending October 1972. In fact, from only Rs. 900,000 in 1971 (ending October), they were able to step up their exports to the level indicated above, achieving nearly 100 per cent increase. The main products exported are transformers and metres including other items in the line.

The production range of the Calcutta Company includes power and distribution transformers, switchboards, switchgears, electric motors, starters, Ironclad switches and also passenger and goods lifts.

PETROLEUM PRODUCTS TO BANGLADESH

India's exports of petroleum products during the first six months of 1972-73 (April-September 1972) achieved a level, equivalent to the full preceding year's export earning (1971-72). Interestingly, the exports during the period under review of 1972-73 amounted to Rs. 67 million as against the entire year's earning at Rs. 68.58 million in 1971-72.

Although a recent entrant in the export field, India's petroleum products are in widespread demand abroad. During April-September 1972, diesel constituted the main export item in the line having fetched the maximum share at Rs. 24.19 million, accounting for more than 35 per cent of the entire export value of petroleum products. Quantumwise 30,864 tonnes were supplied to buyers abroad. Kerosene, the next important item was supplied to the tune of 36.95 million litres to fetch Rs. 19.30 million while light distillates, one more significant product, brought in Rs. 16.17 million (18.72 million litres) and lubricating oils and grease (containing 70 per cent and below 70 per cent weight of petroleum product) earned Rs. 5.44 million (3933 tonnes).

Mineral waxes, residual fuel, oils (heavy ends) pitch from coal tar or other mineral tars, petroleum bitumen and other residues and bituminous mixtures were the other items active in exports.

Recently a sizeable Agreement was concluded between M/s. Indian Oil Corporation Limited, 254-C, Dr. Annie Besant Road, Prabhadevi, Bombay and Bangladesh for the supply of 120,000 tonnes of petroleum products to Bangladesh, valued at nearly Rs. 33.20 million.

The range of export products in the line includes kerosene, HSD, ATF, M5, LDO and aviation gasolene. The Corporation is playing an important role in developing indigenous production of equipment used by oil Companies in handling oil and thus helps the country to save considerable amount of foreign exchange.

EXPORT DIVERSIFICATION OF TOBACCO FIRM

In tune with the Government of India's policy to diversify the range of export products from traditional to non-traditional nature, in recent years, an increasing number of firms have successfully entered divergent fields of manufacture in the non-traditional sector. The tide in the production of such items helped the country to boost the exports of non-traditional goods. Lately, a sizeable number of industrial units have undertaken exporting agency assignments for an innumerable number of small scale units in the country and qualified themselves as 'Export Houses'.

The success story of M/s. India Tobacco Company Limited (ITC), Virginia House, 37, Chowringhee, Calcutta-16 relates to one such firms which have successfully diversified their export range from their traditional tobacco manufactures to a comprehensive range of products—from marine products to handloom goods. During 1972-73, they have been able to boost their exports of non-traditional goods to the peak level of over Rs. 38 million, registering an impressive rise of 64 per cent over their products' exports at Rs. 23.3 million during the previous year. Their export range of non-traditional goods comprise marine products, tobacco manufactures, chemical and allied items, engineering goods and other miscellaneous items including handloom products. Interestingly, the total group exports of ITC and their associate concern M/s. Indian Leaf Tobacco Company during 1972-73 witnessed heights of over Rs. 176 million, accounting for nearly one per cent of the country's total exports.

In their long list of overseas buyers, U.S.A., U.S.S.R., Japan and U.K. are the prominent ones for their bulk purchases. Among the markets that are being developed for sizeable exports by the ITC, Federal Republic of Germany, Australia, Hungary, Sudan, Bangladesh (against hard currency) and Czechoslovakia are important.

For the year 1972-73, the ITC is hopeful of achieving a more sizeable export level.

COTTON MANUFACTURES ACTIVE IN OVERSEAS MARKETS

India manufactured cotton manufactures have gained widespread popularity not only in the developing markets but also in the highly sophisticated countries like U.S.A., U.K., U.S.S.R. and Federal Republic of Germany. The consistently rising volume of exports in the line indicates the superior quality and competitive prices of India's cotton manufactures. In fact, the exports which were of the order of only Rs. 866.27 million in 1969-70 rose to Rs. 975 million in 1970-71 and further increased to Rs. 1000.50 million in 1971-72. During the first half of 1972-73 the export value amounted to Rs. 562.67 million.

During the period under review of 1972-73 (April-September 1972) a wide variety of cotton manufactures was supplied to a large number of markets abroad. These include lungies, dhoties, shirting, sarees, coloured bleeding Madras handkerchiefs, bedticking, furnishing cloth, poplin broad cloth, sheeting card yarn, twill satin, umbrella cloth, canvas card yarn and combed yarn, drill denim, flannelite bleached and unbleached, muslin, voils, longcloth, poplin broad cloth, sarees handprinted, knitted and woven cotton fabrics, tulle lace embroidery, ribbon trimmings and other small wares of cotton, imitation leather cloth, cotton fabrics coated with artificial plastic materials, cotton bags and sacks for packing, tarpaulin tents, travelling blankets, bed sheets of all types, counterpanes, handloom napkins, pillow covers, table cloth covers, towels (handloom and powerlooms), bedlines, curtains, made-ups and unspecified varieties. U.S.A., U.K., U.S.S.R., Afghanistan, Iran, Netherlands, New Zealand, Nepal, Bulgaria, Rumania, Sudan, Canada, Japan, Poland, France, Sweden and Australia are the prominent destinations.

Adding to the export efforts of the sector engaged in the production of cotton manufactures, M/s. Bombay Dyeing and Manufacturing Company, Neville House, Ballard Estate, Bombay-1, secured export orders touching a record level of Rs. 80.4 million during the year ending December, 1972. Their exports rose to this level from Rs. 42 million in 1970 and Rs. 54.8 million in 1971. The firm could boost their exports during 1972 mainly because of exporting a larger quantity of higher priced finished goods and pushing up their sales to United Kingdom, U.S.A., Canada and Europe.

The Company's overall sales–domestic and overseas—registered a significant increase at over Rs. 389 million during the year under review as against Rs. 341.3 million in the preceding year. They have active plans to install Sulzer weaving machines for the first time in India. They have procured necessary licence from the Government of India to instal these machines. Their construction of a new shed to house these new looms is under progress. The firm proposes to manufacture mainly fabrics of synthetic blends on these looms.

The Bombay firm manufactures grey, bleached, dyed and fancy piecegoods, towels and cotton waste blankets; also bleaching, dyeing, calico printing, calendering, mercerising, resin finishing and sanforised cloth.

SLATE PRODUCTS TO GERMAN FEDERAL REPUBLIC

An agreement for the export of slate products on a long-term basis has been recently signed by the Haryana State Industrial Development Corporation with a reputed firm in West Germany. Under the agreement, the Haryana Corporation is to supply slate products to that country for a period of three years in the first instance. An export order valued at Rs. 71,000 was also procured and three consignments have been supplied to West Germany.

The State of Haryana is endowed with large reserves of mineral wealth and the Haryana Corporation is engaged in exploiting the available potential. The establishment of the Marble Processing Factory at Narnaul and the Slate Project at Kund (District Mohindergarh) are among the steps taken towards profitable exploitation of the marble and slate reserves available for marketing at home and abroad.

EXPORT OF CYCLE KNOW-HOW

One of India's leading manufacturers and exporters of bicycles, M/s. Atlas Cycle Industries Limited, Sonepat (Haryana) are poised to sign an agreement with two Indonesian parties for the supply of technical knowhow and financial assistance to set up a factory in Indonesia. The Indian firm has already exchanged letters of agreement in principle with the Indonesian parties.

Details regarding the completion of a technical collaboration agreement between the above firm with the National Development Corporation of Tanzania for the manufacture of bicycles appeared in this weekly dated April 21, 1973.

The Sonepat firm has earlier entered into an agreement for lending technical know-how to a leading motor-cycle manufacturer of Tehran (Iran) for the production of 60,000 bicycles every year. The Iranian party is already making progress in bicycle manufacture through the know-how and components supplied by M/s. Atlas. The agreement with the Iranian party which was signed in early 1972 has worked successfully for one year and has been extended since.

EXPORT PROGRESS OF KANPUR FOOTWEAR CORPORATION

The Tannery and Footwear Corporation of India Limited, Kanpur is a typical example of a new and economically planned public sector undertaking with series of modernisation programmes under implementation for its future. The Footwear and Tannery Units of the Corporation are inherited from the private sector to save a sizeable labour force from unemployment. A detailed renovation and modernisation programme of a value of Rs. 20 million during the Fourth Plan was drawn up and the first phase of the programme is under implementation by the Corporation.

The Corporation has already achieved notable success in terms of capacity utilisation, production, export sales, research and development. While the production in 1969-70 was of the order of about Rs. 8 million, the Corporation achieved a level of output at about Rs. 18 million in 1971-72 and Rs. 10.6 million in the first half of 1972-73. The Corporation's total sales increased from Rs. 4.6 million in 1969-70 to Rs. 20 million in the following year.

While during the period of private management, the Corporation's units had no significant exports, the Corporation has been making serious efforts to become more and more export oriented. In the year 1971-72, its export sales totalled Rs. 1 million. Even in the first half of 1972-73, the export value was nearly Rs. 1 million. While initially, its exports were effected entirely to the Soviet Union, the years that followed witnessed a wider coverage of destinations and export links have been established successfully with the U.S.A., U.K., Australia, Sudan, German Federal Republic, Italy, France and Japan. Initially, the Corporation's exports were mainly restricted to sandals, but the range of export products became wider subsequently and included items, such as, wet blue, semi-finished and finished leathers, footwear, footwear uppers and components, harness and saddlery, bridles and belts. To improve the working of its unit, the Corporation has been devising a series of measures such as enforcement of strict quality control, establistment of a fulfledged Design Department for footwear, product diversification, standardisation of processes leading to reduction in consumption of processed raw materials, gearing up of preventive maintenance and the setting up of a Research and Development Cell for standardisation, product development and import substitution.

The Kanpur Corporation's future plans include the setting up of a unit for the manufacture of Myrobalan extract powders, glue and gelatine from fleshings waste, canvas PVC and Combination footwear.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT POLICY RESOLUTION

PROGRESS IN IMPLEMENTATION

The guidelines for India's export policy and programme were spelt out in the Export Policy Resolution laid before the National Parliament in July, 1970. The Resolution touched on various aspects of export promotion ranging from export production to actual shipments, as well as the trading climate prevailing inside and outside the country that would effect the export trade.

With a view to facilitate export production, the country's industrial licensing and import policies have been suitably modified. Export oriented industries have come to be allowed to import capital goods from out of the bulk allocation of foreign exchange and other credits. Export units are being given high priority in the allotment of capital goods, equipment, dyes and jigs that are not indigenously manufactured, for purpose of expansion, modernisation and diversification of their production basis for increased exports. The Government of India also encourage enlargement of the number of exporting units. All successful units are to receive assistance for expansion and have become more efficient in export trade over a period of time. A scheme has been evolved to assist industrial units desiring to enter the export field and building up their potential so that they could become eligible for the special treatment accorded to export oriented units. Industrial units which are not exporting currently or which are exporting insufficiently would be encouraged to put forward phased programmes of export of their products.

According to the Annual Report of the Ministry of Commerce for the year 1972-73, the Ministries of Commerce and Industrial Development are currently engaged in drawing up concrete export production plans in respect of items having maximum export prospects. About 20 product lines have been identified and working groups set up to review the existing capacity and production of these product lines and identify gaps in existing capacity to meet export targets. As a part of the national export policy, export obligations have been imposed in certain lines of manufacture; while granting import licences for capital goods or industrial licences or approval for foreign collaboration, conditions are being imposed so that the beneficiary would effect exports up to a prescribed quantum within a time limit.

While such being the progress made in respect of streamlining export production programmes, another area specified under the Export Policy Resolution, namely, development of commercial crops has also been receiving close attention. For instance, certain centrally sponsored schemes were activised for improving cotton yield. The Fourth Plan production target for cotton was set at 8 million bales. In 1970-71 actual cotton production was, however, only 4.5 million bales. To urgently tackle the problem of increasing the cotton production, an Intensive Cotton District Programme with a financial outlay of Rs. 147.3 million was sanctioned for the last three years of the Fourth Five-Pear Plan. As a result of the Programme and other measures, an all time record production of 6·53 million bales of cotton was achieved during 1971-72. During 1972-73 the Intensive Cotton District Programme proposes to cover 660,000 hectares. As in respect of cotton, jute production has also been receiving boost. From 88,900 hectares in 1971-72, the area under its cultivation improved to 176,160 hectares in 1972-73. In 1971-72 actual jute production was of the order of 5.7 million bales. Increases in oil-seeds production are also being sought to be achieved mainly by raising the productivity per unit area. Measures like package programmes in ground nut, mass plant protection measures on rape-mustard and extension of area under high-yielding varieties of castor have yielded the desired results. In addition to the steps taken for improving the production of cultivated oil seeds, measures have been adopted for exploitation of other sources of vegetable oils, namely, cotton-seed, rice-bran and oilseed of Tree-origin. Total potential of cottonseed oil in India is estimated at 200,000 tonnes. About 40 per cent of cottonseed produced in the country is being crushed, the rest being fed to the cattle. In order to encourage larger crushing of cottonseed for oil, a minimum usage of 15 per cent of the oil has been made compulsory in Vanaspati making. Among other cash crops, tobacco has come to receive good attention. The Fourth Five-Year Plan aimed at increasing tobacco production from the base level of 350 million kg. in 1968-69 to 450 million kg. 1973-74. As indicated in the Export Policy Resolution, measures have been initiated for the expansion of the country's deep sea fishing fleet also. The number of mechanised boats operating round the Indian Sea rose from 7700 in the beginning of the Fourth Five-Year Plan to 10,700 at the end of 1971-72 and the number is expected to go up to 11,700 by the end of 1972-73. The question of procuring increased number of trawlers either by way of import or by indigenous production is being pursued actively. The number of freezing plants is also sought to be increased.

Apart from improving export production and developing cash crops, the Export Policy Resolution has laid emphasis on the production of infra-structural facilities. Accordingly, there has been progress in respect of deep sea fishing, development of the mineral sector and modernisation and diversification of the textile industry. As envisaged by the Resolution, construction of major fishing harbours at Madras, Bombay and Cochin has been approved and work on large fishing harbours at Tuticorin and Vizhinjhom is in progress. A continuous effort is being made on the mineral front to increase export of mineral ores as also to diversify the exports, production-wise and direction-wise. The major constraints, namely, lack of mechanical ore-handling facilities and deep draft ports are sought to be removed. Semi-mechanisation facilities have already been established at Madras and Vizag ports. New ore-berths have been commissioned in Madras and facilities to receive bulk carriers of more than 100,000 DWT are being developed in Madras and Vizag. Certain new minerals like Vermiculite and kyanite have also started being exported.

The Export Policy Resolution envisaged that the public sector should play an important role in the expansion of the country's foreign trade. In accordance with the Resolution, progressive canalisation of several items in the import and export trade has been effected. The share of the public sector in the country's trade now amounts to around three-fourths of the total import bill. In regard to exports, the share has gone up to one-fifth of the total exports. The total turnover of the public sector undertakings under the Ministry of Commerce increased from Rs. 4770 million in the preceding year to Rs. 5870 million in 1971-72.

As laid down in the Export Policy Resolution, several other aspects of export importance have been tackled successfully. The transport infra-structure, improvement of port facilities, provision of export finances, efforts at inter-national level to promote trade, quality control, product and market research, publicity abroad and such other operations facilitating export promotion have witnessed improvement since the Export Policy Resolution was drawn up.

With all these measures, the growth rate of exports during the first three years of the Fourth Plan was at an average compound rate of 5.8 per cent per annum. In the first three quarters of 1972-73, exports have shown particularly massive rise and according to the

Annual Report of the Ministry of Commerce for 1972-73, it is hoped that India's export trade will touch the target of Rs. 17600 million set for 1972-73.

RECORD EXPORT DEALS AT LEIPZIG FAIR

Indian manufacturing companies and Export Houses concluded record export orders amounting to about Rs. 28.4 million during India's participation at the Leipzig International Trade Fair in German Democratic Republic, held in March 1973.

Actual contracts signed this year thus doubled up compared to Rs. 14.4 million contracted in 1972. Additionally, export business worth Rs. 33 million was under negotiations by the time the Fair ended.

Set up by the Directorate of Exhibitions and Commercial Publicity, Ministry of Commerce, India's participation was among the largest (1015 square metres) among overseas participations, outside socialist bloc. For the first time on display were a number of sophisticated engineering and electronic items. Among these were electronic desk calculators, band wave components, ultrasonic monitors, transistor radios, TV set and components, and do-it-your self transistor radio kits. Also on display were air circuit breakers, electricity metres, electronic metres, transistor batteries, flash lights, castings and forgings, sanitary and bathroom fittings, asbestos cement products, small tools, automobile components, electrical appliances, knitting machines, sewing machines, heavy duty tyres, vacuum flasks, sports goods, readymade garments and hosiery.

Over hundred Indian manufacturers and export houses participated in India Pavilion, both at collective pavilion and specialised commodity halls.

India has been participating for over twenty years in Leipzig fair which is the oldest trade fair in Europe, attracting buyers and sellers from a large number of countries.

Among the commodities for which export orders were concluded were electric motors, knitting machines, footwear and leather articles, hosiery, tea (including tea packets), tarpaulins and hessians cloth, processed foods, pepper and crushed bones, coir yarn, jute goods, silk and silk articles and semi-precious stones.

The items for which business negotiations are continuing include tyres and tubes, neckties, sports goods, thermos flasks, flash lights, forgings and textiles.

An interesting feature of India's participation in the Leipzig fair was in respect of the trade enquiries received from Federal Republic of Germany, Yugoslavia, Zambia, U.K., Italy, Ireland, Switzerland and Chile. Enquiries from these countries related to export from India of items such as transistors, diodes, capacitors, various types of pressing, drilling and milling machines, nuts and bolts, hand tools and a sizeable number of consumer items.

Followed by its participation in the Leipzig Fair, India will participate in trade fair in France—'Faire de Paris' to be held in Paris from April 28 to May 13, 1973.

India's industrial development and export potential will be projected in the fair. A wide range of engineering and other sophisticated products depicting progress that India has made during the last two decades will be on display. Other items like handicrafts, readymade garments, cotton textiles will also be exhibited.

The Directorate of Exhibitions and Commercial Publicity proposes to participate in about twenty international trade fairs during 1973-74. These include important trade fairs in Europe, Africa, South East Asia, West Asia and Latin America.

POTENTIAL OF EXPORT TO BAHREIN

A recent visit of a trade delegation from Bahrein Island to India has facilitated the visiting team to know India's capability in the manufacture and export of a broad range of industrial and consumer items, covering all aspects of modern economic activitities. During its short visit, the Bahrein team conducted extensive tours of the country's industrial towns-Delhi, Bombay, Poona, Ghaziabad and Faridabad and placed trial orders for engineering goods with a Delhi firm valued at Rs. 30,000. It also evinced keen interest in the machine-made carpets and mango juice. The delegation stated that there was considerable scope for Indian consultancy services and technical skill in the Gulf countries. Besides, there exists considerable potential for setting up joint ventures particularly, in the fields of hotel, food processing plants and pharmaceutical plants in Bahrein.

The delegation further showed its keen interest in building and construction materials of all kinds, prefabricated materials, surgical instuments and appliances, surgical gloves, cosmetics, ties, furniture, office equipment, furnishing, textiles, pumps and oil engines and decorative laminates. The trade team invited Indian technical personnel and men to participate in the building and construction activities currently being undertaken on extensive scale in the Bahrein Islands.

India's present exports to Bahrein are limited and there exists a vast potential to expand it. During 1971-72, Indian exports to Bahrein amounted to Rs. 35 50 million, while India's imports from that country totalled Rs. 3 million in that year.

CONSISTENT EXPORT GROWTH IN SPORTS GOODS

The exports of sports goods from India have witnessed a consistent growth in the past few years. The export value was Rs. 13.56 million in 1969-70. It rose to about Rs. 17.60 million in 1970-71 and Rs. 25.50 million in 1971-72. For the year 1972-73, the export earning from sports goods is estimated at Rs. 27.50 million more or less achieving the target of Rs. 30 million laid for the year. The target for 1973-74 has been placed at Rs. 50 million.

During the first three quarters of 1972-73 (April-December 1972), the actual export value of sports goods at Rs. 20.60 million showed an increase of Rs. 5 million or 34 per cent over the export performance at Rs. 15.5 million during the corresponding period of the preceding year. The increase in exports was recorded in respect of markets like Australia, Austria, Bahrein Islands, Belgium, Canada, Sri Lanka, Netherlands, Italy, Kenya, Kuwait, France, Mauritius, Poland, Zambia, Malawi, Sweden, Spain, Switzerland, Thailand, U.K., U.S.A. and West Germany.

A new market has also been developed in Poland where sizeable exports to the tune of about Rs. 1 million have been made after a lapse of a few years. The exports are, however, more or less static in respect of traditional markets in Africa, Middle East, Malaysia and Singapore.

Commoditywise exports have shown a marked improvement in respect of football and other leather balls, rackets, bladders, E.P.N.S. sportsware and items used for indoor games.

The Government of India have brought sports goods exports under quality control measures to ensure that only quality goods are supplied to buyers abroad. The Sports Goods Export Promotion Council is entrusted to deal with the question of laying down requisite norms of conduct and application for manufacturing and fabrication of sports products for different sports. For carrying out rigorous tests on the exportable goods, testing equipment has been installed at the quality marketing centres where the manufactures are also afforded the facility of following the quality specifications adopted by these centres.

A recent trend in the industry is towards expansion and modernisation of large units and transformation of small ones into larger units. It would help the industry in standardization and expansion of the production. The industry is progressively achieving diversification of product range to satisfy the consumers at home and abroad.

There are 650 units engaged in the production of sports goods in the country, of which about 240 are located at Jullundur (Punjab) alone. Meerut, Moradabad, Delhi, Calcutta and Bombay are the other main centres of production of sports goods. During 1970-71, the production of the industry was valued at Rs. 53 million as against an installed capacity worth Rs. 70 million. The proportion of domestic consumption is around 70 per cent of the total production.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PROGRESS IN CRUDE OIL PRODUCTION

Production of crude oil by the Oil and Natural Gas Gommission (ONGC) has been raised both in Eastern and Western regions of the country. The ratio of production was raised from 11,100 tonnes a day on March 31, 1972 to about 11400 tonnes a day in November 1972.

During the period April-November 1972, a total of 2.7 million tonnes of crude oil was produced and despatched from the oil fields of the Commission in Gujarat and Assam to refineries in the country.

Since the inception of ONGC and up to end of November 1972, the Commission produced and sold a total of 25.87 million tonnes of crude oil. The supply of gas was also stepped up. The Commission supplied 225.3 million cubic metres of gas to various consumers during the year. A total of 2204 million cubic metres of gas has been sold upto mid-November.

The work on construction of a micro–crystalline plant at Ankleshwar was commenced during the year. It is expected that with the commissioning of this plant in 1973, the country would meet a considerable portion of its demand for micro–crystalline wax indigenously, thereby saving substantial amount of foreign exchange.

The self elevating, self propelled mobile drilling platform being built by a Japanese firm is likely to be delivered to ONGC during 1973. Exploratory drilling on certain off shore structures in Arabian sea adjoining Gulf of Cambay beginning with 'Bombay High' is expected to start soon after the delivery of the platform.

IMPORT SUBSTITUTION BY INDIAN OIL

Alongside their efforts to boost exports of the petroleum products, M/s. Indian Oil Corporation (IOC), 254-C, Dr. Annie Besant Road, Prabhadevi, Bombay, achieved significant strides in the field of import substitution also. They have to their credit development of indigenous refuellers of 45 Kl capacity for refuelling jumbo jets and similar aircrafts. With the development of refuellers indigenously, the Corporation has been able to save considerable amount of foreign exchange.

The developed giant aircraft refueller with an overall length of over 16 metres (54 inches) is the first of its kind, entirely designed by the technical personnel of the IOC's Aviation Department and fabricated in the country with almost 90 per cent indigenous components. The new refuelling device has already saved foreign exchange to the tune of Rs. 3.5 million and will further help in an annual recurring saving of Rs. 2 million per year.

It is claimed that excluding Europe and U.S.A. no other country in the world has so far developed such a sophisticated equipment of this size which conforms to rigid international standards for aircraft refuelling. The refueller having a capacity to deliver aviation fuel at the rate of 4500 litres per minute, has been designed and manufactured with the latest engineering techniques. These refuellers are currently in operation at New Delhi, Bombay, Calcutta and Madras air ports. A firm in Poona, M/s. Mahindra Owens, have manufactured these refuellers on behalf of IOC under the technical guidance of IOC engineers.

The Inventions Promotion Board of India, on the recent (Indian Republic Day January 26) announced the awards for M/s. Indian Oil Corporation of their outstanding achievement in the field of import substitution.

TELEPRINTERS PRODUCTION UP

India is making significant strides in the production of sophisticated electronic based equipment in recent years. M/s. Hindustan Teleprinters Limited, Madras, the State owned undertaking, outstripped their production targets set for all their departments during 1971-72. During the year, they achieved an all time high record level in the production of teleprinters at 6042 numbers exceeding their target for the year by 42 units. In 1970-71, their production in the line was of the order of 4779 numbers.

The Madras firm has to their credit designing bilingual teleprinters exclusively for export purpose. The recent addition to their product range are teleprinter English-Sinhalese and English-Korean. The production of these teleprinters will commence as soon as the export orders from Sri Lanka and Korea are finalised.

India–manufactured teleprinters are already in great demand in a large number of countries abroad. Especially the demand is growing in West Asia, Far East and other Asian countries. The Madras firm's product range in the line includes type teleprinters, page teleprinters, automatic tape transmitters, tape transmitter adjustments, reperforating adjustments, signalling power supply units etc. The firm has developed a capability to manufacture teleprinters with different key boards, according to the requirements of the buyers abroad. As a part of their efforts towards diversification, the firm will undertake manufacture of electric typewriters.

ALUMINA PLANT COMMISSIONED

A plant in public sector of M/s. Bharat Aluminium Company at Korba in Madhya Pradesh for production of alumina, a basic raw material for production of aluminium metal, recently went on production stream.

The Rs. 392 million plant is estimated to produce 200,000 tonnes of alumina which will provide basic raw material for production of 100,000 tonnes of aluminium. The import content of the plant is of the order of only Rs. 20 million, accounting for hardly 5 per cent of the total estimated cost of the plant.

The second stage of the Korba integrated plant with technical assistance of USSR and Hungary includes construction of an aluminium plant at a cost of Rs. 1500 million. It is expected to be commissioned by March 1976. The production of aluminium by the plant has been estimated at 100,000 tonnes, comprising 40,000 tonnes ingots, 40,000 tonnes sheets, 10,000 tonnes properized rods for electrical conductors and 10,000 tonnes of various extruded sections.

Bauxite, the principal raw material used in production of aluminium will be available from two mines, namely, Amarkantak, having annual capacity of 420,000 tonnes and Phutkapahar, with a capacity of 130,000 tonnes per annum.

The alumina plant has been set up with modern technology and designs. Detailed engineering work for the second stage of the aluminium plant, involving fabrication and smelter units, is already in progress and construction work has also started.

INCREASE IN SUGAR PRODUCTION

The total production of sugar during the season beginning from October 1, 1972 to April 15, 1973, was 3.52 million tonnes; 0.60 million tonnes more than 2.90 million tonnes produced during the corresponding period last year.

Despatches of sugar during the year upto April 15, 1973, were 1.87 million tonnes as against 2.17 million tonnes during the corresponding period last year.

The stocks of sugar with the factories at the close of April 15, 1973 were 2.24 million tonnes as against 2.15 million tonnes on the corresponding date last year.

Seventy-eight factories were reported to be in production till April end 1973 as against 33 factories on the same day last year.

GUJARAT PETROCHEMICAL COMPLEX

The Aromatics Project of the Gujarat Petrochemical Complex is expected to be commissioned during 1973 and the Olefins Projects are expected to go on stream in 1974, according to the Annual Report of the Ministry of Petroleum and Chemicals for 1972-73.

The Gujarat Petrochemical Complex, the first petrochemical complex being set up in the public sector and being implemented by the Indian Petrochemicals Corporation Limited, would have capital outlay of Rs. 1800 million. The Complex basically consists of the Aromatics Project and the Olefins Projects comprise a Naphtha cracker and its associated downstream units.

The IPCL is also taking preliminary steps to implement the refinery-cum-pertrochemical complex in Assam and a Polyester Filament Yarn unit in Gujarat at an estimated cost of Rs. 811 million and nearly Rs. 154 million respectively.

The Aromatics Project will produce annually 24,000 tonnes of DMT, 21,000 tonnes of ortho-xylene and 2,500 tonnes of mixed xylenes. The DMT plant is expected to go into commercial production shortly and the xylenes part is likely to be commissioned by the middle of 1973.

The Olefin project envisages production of a number of olefin streams by cracking 4,53,000 tonnes of Naphtha annually. The project is expected to cost an estimated Rs. 298 million and is likely to go on stream in 1974.

The Petrochemical complex attached to the Bongaigaon refinery in Assam is to consist of an integrated 30,000 tonnes DMT-Polyester fibre unit with an estimated capital outlay of Rs. 662 million, including a foreign exchange component of Rs. 228.7 million.

Petrochemicals is a rapidly developing field all over the world and the Gujarat Petrochemical complex, which will be one of the world's largest, represents the first major effort being made in India in the public sector.

The primary products produced by the Naphtha cracker in Gujarat will be processed into intermediates and end-products by seven downstream units which are being put up by the IPCL. These units will be for production of Acrylonitrile (24,000 tonnes), Polyethylene (80,000 tonnes), Polypropylene (30,000 tonnes), Detergent Alkylate (30,000 tonnes), Etylene Glycol (20,000 tonnes), Synthetic Rubber (20,000 tonnes and Acrylic fibre (12,000 tonnes). The units are expected to go on stream in 1975.

In addition to these units, the Gujarat State Fertilizer Company is implementing a project for the manufacture of caprolactam which is expected to be commissioned during 1973.

A project for the manufacure of 7,000 tonnes of polyester filament yarn is being set up jointly by the Government and cooperatives of yarn users at an estimated cost of nearly Rs. 154 million with a foreign exchange component of Rs. 73.8 million.

FLUID COUPLINGS INDIGENOUSLY PRODUCED

M/s. Hydro Dynamic Equipments, 20/B, Friend's Colony, South Tukoganj, Indore, have succeeded in pioneering the manufacture of fluid couplings in India. The kinds of couplings that the firm can manufacture include traction fluid couplings upto 2000 H.P., fluid drive pull upto 300 H.P. and scoop control fluid couplings upto 500 H. P. These fluid couplings are being imported presently into India from the U.K., Japan and German Federal Republic. Now, the Indian firm, based on the entrepreneurial skill of young engineers, has developed and designed couplings indigenously and they are manufacturing the same out of indigenous components. The firm believes that in view of their ability to produce the couplings, not only their imports could be stopped but sizeable surpluses could be released for exports to the countries which are presently importing.

Power transmission through fluids is achieved by Hydro Dynamic and hydro static principles. Fluid couplings function on hydro dynamic principles while the power is transmitted from prime mover to load by the kinetic energy of continuously circulating fluid.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

TOGGLES FOR STRAINING LEATHER FOR DRYING

The Central Research Institute (CLRI), Madras, has developed a robust design for manufacturing toggles which are required for drying leather during the processing of hides and skins. India's leather industry needs annually about 100,000 units of toggles.

The CLRI developed toggles have many advantages. The method employed is simple. No wooden or metallic roller is required. The product developed is easy to repair and inexpensive forest wood can be used in place of aluminium. These toggles can be produced economically by any small scale industrialist or cottage industry using indigenous raw material and equipment.

Presently, the demand for toggles is met partially by imports and partially by local production. The demand will increase in the years to come with the modernisation of tanneries.

Main items of raw materials required are 20 G Brass Sheet 6′ x 4′, steel spring wire and nails. Main items of equipment required are metal forming press designed by CLRI, Madras and soldering equipment. All these are indigenously available.

There is immense scope for commercial exploitation of the process developed as the toggles produced on pilot plant scale have received favourable report from the consumers.

CATALYST FOR MINE SAFETY RESCUE MASK

The Defence Research Laboratory (Materials), Kanpur has developed Hopcalite catalyst which is used in making mine safety rescue masks.

Hopcalite catalyst can oxidise carbon monoxide to only upto carbon dioxide at ambient temperature and pressure and is also used in ships in the pre-compression chambers and in mine safety devices. Present demand is met from imports.

The work by the above organisation has been done only upto laboratory scale and the upscaling of each step will have to be done by the entrepreneur by availing the services of suitable chemical engineering consultants.

The product has been tested as per Russian specification by the laboratory and is found to be satisfactory. The product has also been found to be satisfactory when tested with the standard tests prescribed by the Bureau of mines.

All the raw materials required except manganous sulphate are available indigenously. However, this material is also likely to be made available indigenously.

Main items of equipment required are Glass lined vessel with motor stirrers (2), Refrigeration thermostat (1), Ovens (2), Mechanical kneader (1), Hydraulic press, Filter press, Stainless steel tank with stirrer and Grinder and pelletizer. Apart from this, a small steam generating unit will also be required.

MICROFILTER CARTRIDGES

The National Chemical Laboratory (NCL), Poona, has developed a process for the manufacture of microfilter cartridges which are not yet manufactured indigenously. Microfilters are filter cartridges used for a variety of filtrations where clean and compact filtration is required. These filters can be used for the removal of fine suspended particles from large volumes of liquids such as portable water, food products and pharmaceuticals. The pore size of the filters is around 10 microns. The filtration is about 20 lit. per minute around 30 psi. The rate of filtration assembly is very compact. It consists of a housing in which the filter cartridge is held tight. The cartridge can be cleaned for continued use but has to be replaced when pores get heavily clogged up during prolonged use.

The process consists of reacting a thermosetting resin with high grade pulp. The resin is well mixed with the pulp and dried. The dried material is powdered using a rotary grinder and sieved. The sieved material is packed in suitable moulds and cured at about 200°C. The laboratory experiments have been conducted with about 600 gm. of pulp per batch, resulting in the fabrication of five 10″ long and about 3″ diameter cartridges. These filter cartridges have shown comparable results with the similar imported filter cartridges.

The major important equipment required for the manufacture of these cartridges are stainless steel jacketted vessel with stirrer, sigma blade mixer, ovens for drying and curing, rotary knife cutter, sieve, and vacuum pump. All these are available indigenously.

DE-COPPERING MATERIAL DEVELOPED

On repeated firing, in addition to fouling, a layer of copper alloy is deposited on the rifled portion of gun barrels due to the passage of projectile driving band. Excessive coppering may result in inaccurate firing. There is also possibility of accident occuring if the copper deposit conceals a steel obstruction. Present method employed for defouling and decoppering of large calibre gun barrels is carried out in two stages. The methods are time cousuming, laborious and the residues of chemical left over are corrosive to the material of construction of barrels.

In order to overcome the above defects, the Defence Research Laboratory (Materials), Kanpur, has developed 'Chem clean' which is very effective in defouling and decoppering in one stage. Chem-clean dissolves copper at a much faster rate and the residues left over are non-corrosive to the material of construction of barrels. The developed composition is also effective in softening and removing hard tenacious carbon deposits/soot from aluminium, mild steel and cast iron components. The process involves in weighing, mixing and packing. Chem-clean has been successfully tried in various technical-cum-users trials for defouling and decoppering of tank, artillery and Naval guns. All the ingredients used are indigenous and readily available. 'Chem-clean' is supplied in large (750 g) and small (150 g) packs to make 5 & 1 litre of solution respectively after mixing with water.

INDUSTRIAL PRODUCTION TRENDS AND POLICY

India's Industrial production has revealed notable improvement in 1972. The production index, with 1960 as the base year, recorded a rate of growth of 7.3 per cent in the first nine months of the year as compared to the same period of 1971, according to the Annual Report of the Ministry of Industrial Development for the year 1972-73. This rate of growth was in sharp contrast to a production growth of only 2.9 per cent during 1971 and 4.8 per cent in 1970.

The resurgence in the output of cotton textiles and transport equipment was an important contributing factor to the growth of industrial production in 1972. The output of basic industries including mining, heavy chemicals, cement and basic metals has also witnessed progress. Also the output of capital goods industries, mainly incorporating industrial and electrical machinery and transport equipment improved. Major industries that have shown rapid growth in production during 1972 are nitrogenous fertilizers, viscose staple fibre and filament yarn, nylon filament yarn and polyester fibre, automobile and tractor tyres and tubes, drugs and medicines, lead, zinc and antimony, steel castings, heavy structurals, cast ironspun pipe, steel pipes and tubes, ball and roller bearings, machine tools and certain industrial machinery, electrical cables and wires, ship building and repairing equipment.

In the industrial machinery sector, production of sugar mill machinery improved from Rs. 163.48 million in 1971 to Rs. 180 million in 1972. The output of conveyors rose from Rs. 104 million to Rs. 110 million, reduction gears Rs. 57.6 million to Rs. 70 million, rayon plants Rs. 14 million to Rs. 16.5 million, pulp and paper machinery Rs. 53.5 million to Rs. 67.5 million, industrial roller chains Rs. 14.6 million to Rs. 18.5 million, ball and roller bearings 18.86 million numbers to 21 million numbers; chemical and pharmaceutical machinery (including heavy fabricated machines for fertilizers) Rs. 202 million to Rs. 276 million, railway wagons 8010 numbers to 9720 numbers in terms of four-wheelers, dairy machinery Rs. 34.7 million to Rs. 37 million, transmission towers 57,770 tonnes to 60,000 tonnes, ship building and repair Rs. 97.48 million to Rs. 100 million and light, medium and heavy structurals 104210 tonnes to 118000 tonnes.

Among the light electrical industries, the output of GLS lamps rose from 110 million numbers in 1971 to 129 million numbers in the following year while that of fluoroscent tubes improved from 10.6 million numbers to 15.3 million numbers, miniature lamps 39 million numbers to 57 million numbers, electric fans 1.9[illegible] million numbers to 2.75 million numbers and storage batteries 1.16 million numbers to 1.3 million numbers. In the heavy electrical industries sector, the production of transformers improved from 10.16 million KVA to 10.8 million KVA, switchgears and controlgears Rs. 451 million to Rs. 472 million and AAC/ACSR conductors 73,365 tonnes to 86,000 tonnes. Among the heavy engineering industries, the output of boiler and mountings revealed progress from Rs. 409 million to Rs. 500 million, cast iron castings from 104,000 tonnes to 123,000 tonnes, steel castings 54300 tonnes to 62,000 tonnes and malleable iron castings 17,000 tonnes to 18500 tonnes.

In the instruments group, industrial process control instruments were produced at a higher level—Rs. 74 million in 1971 and Rs. 81 million in 1972. Likewise the production of many other instruments went up such as scientific and surveying instruments from Rs. 33 million to over Rs. 38 million, medical and surgical instruments from Rs. 16.6 million to Rs. 20 million and X-ray and electro-medical equipment Rs. 27.7 million to Rs 30 million.

An interesting feature in the trends in the industrial production in 1972 was a significant increase in the output of a number of public sector projects. The output of power generating equipment at the three plants of M/s. Bharat Heavy Electricals Limited as also M/s. Heavy Electricals Plant at Bhopal, for instance, increased by more than 50 per cent during 1972. The output of different types of cables at Hindustan Cables Plant increased by more than 50 per cent. The production of the National Instruments and Opthalmic Glass unit at Calcutta rose by 14 per cent. Newsprint production at M/s. Nepa Mills increased marginally by 5 per cent, while the output of M/s. Instrumentation Limited, Kota rose by about 1½ per cent.

According to the Annual Report of the Industrial Development Ministry, an important factor in the growth of industrial production during 1972 was the better utilisation of installed capacity. Although the constraint of demand inadequacy continued to affect certain industries like stationary diesel engines, capacity utilisation has improved in general. In a number of industries like cement, paper, aluminium, caustic soda, soda ash and calcium carbide, capacity limitation has in fact proved to be a constraint on the growth of further production. In most of these industries, capacity utilisation has been as high as 90 per cent and even more. Again, better availability of raw materials helped to improve capacity utilisation in steel based industries like steel pipes and tubes.

In the year under review (1972), the major industrial sectors for which Letters of Intent that were issued for establishing new undertakings mainly include metallurgical industries, electrical equipment and transport equipment, industrial machinery, certain engineering industries, a broad range of chemical industries and food processing industries. Substantial capacities were licensed in a number of fields, such as cement, power, calcium carbide, industrial gases, automobile tyres and tubes and automobile ancillaries. The total number of foreign collaboration cases approved in 1972 were as many as 256 of which 36 involved financial participation and the rest were concerned with the transfer of technical know-how and payment of royalty/technical know-how fees.

Notwithstanding the fact that the overall import bill for the year went up partly in response to a shortfall in agricultural output and partly because of increase in import prices, import substitution in the industrial sector has witnessed progress. Several essential industrial raw materials and intermediate products came into production for the first time in 1972 such as direct overhung steam turbines, needle roller cages, several new ranges of industrial roller chains, aluminium bearing metal alloy, iron powder, silicon carbide, synthetic grains and data entry devices.

The Annual Report stated that "judging from the trends of production and other indicators, there is ground for cautious optimism as to the growth of industrial production in 1973". A step-up of industrial activity has been in evidence. Apart from the inceased licensing of capital goods imports, there has been an acceleration of Plan outlay on industry.

Indian Government's policies during 1972 were mainly directed towards activising the sluggish rate of industrial growth and in creating conditions in which an accelerated rate of industrial growth would be possible on a sustained basis. At the beginning of 1972, the Government of India announced facilities for fuller utilisation of existing capacity in 54 selected industries. In October, these facilities were extended to 11 more industries. In all, 787 applications were received for revision of licensed capacity under these facilities and the applications were mainly concentrated in industries such as transport equipment, electrical equipment and drugs and pharmaceuticals. A variety of measures for the revival of industrial growth were continued to be devised by the Government. The Government of India took over the management of sick textile and engineer-

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ing units in different parts of the country. The management of 18 textile and engineering units was taken over during 1972, making the total number of such units taken over to 51 in textiles, 10 in engineering industries and 3 in the sugar industries. A 16-point programme in West Bengal bore fruit in bringing about improved industrial relations, entrepreneurial interest in investment and re-opening of a number of closed units.

Certain changes in industrial policy were announced by the Government in early February 1973, to stimulate the growth in all priority industries of importance in the Fifth Five-Year-Plan, subject to a more effective enforcement of social objectives. The definitions of large industrial houses for licensing purposes and the control of concentration of economic power have been brought in time and a parity established by the adoption of the lower limited of Rs. 200 million as also the definition of inter-connected undertakings as provided in the Monopolies and Restrictive Trade Practices (MRTP) Act, 1969. Government have also consolidated the list of industries that are open for the participation of larger industrial houses and foreign concerns along with other applicants. Along with these measures, an important part of policy has been to encourage competent small and medium entrepreneurs in all industries. Such entrepreneurs will ordinarily be preferred vis-a-vis larger industrial houses and foreign concerns for the setting up of new capacity. Cooperatives and small and medium entrepreneurs will be encouraged to participate in the production of mass consumption goods, with the public sector also taking an increasing role. Other investors will be allowed to participate in the production of mass consumption goods only if there are special factors such as economies of scale, prices, technological improvements, substantial export possibilities or as a part of modernisation. ☐

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TEXTILE MACHINERY TO SOUTH EAST ASIA

India's textile machinery is gaining consistent popularity abroad. The export earning of the machinery secured as much as Rs. 49 million in foreign exchange during 1971-72. The major variety exported relates to spinning ring frames and the leading importers include Arab Republic of Egypt, Malaysia, Indonesia, Poland, Iraq, Sri Lanka and the U. K. Non-cotton textile fibre processing machines, cotton spinning and weaving machines and non-cotton textile fibre processing machines have also been finding their way in export markets in increasing quantities. Automatic machines, textile drawing machines and a host of accessories of textile machinery are equally active on export front.

M/s. Lakshmi Machine Works Limited, Coimbatore which manufactures cotton textile spinning machinery in collaboration which M/s. Reiter Machine Works, Switzerland, has recently succeeded in securing substantial export orders from Hong Kong and Singapore. It is claimed that this is the first Indian textile spinning manufacturer which is supplying their high speed draw frames, speed frames and ring spinning frames to these markets. These export orders are stated to have been obtained against stiff international competition.

The Company exported high speed draw frames to its collaborating country, Switzerland, which is a clear proof of the competitive performance of their machines and the confidence that their collaborators reposed in them.

During 1972, the Company exported ring frames and spare parts worth Rs. 2.33 million to the Arab Republic of Egypt. They have also been receiving encouraging enquiries from Indonesia, Nigeria, Sudan and Afghanistan.

The Coimbatore firm is also to supply its machinery to M/s. Champaka Negri Lakshmi Textiles, SDN, Berhad, Malaysia, under a joint venture promoted by their sister concern, Messrs. Lakshmi Textile Exporters Pvt. Ltd. for an approximate value of Rs. 6.5 million.

A traditional producer of textiles, the Indian industry covered a long distance in terms of installed capacity and annual production rates of textile machinery. The total capacity available in the country today is of the order of Rs. 450 million per year and the licensed capacity is around Rs. 670 million. In terms of actual production, the textile machinery sector in India touched an output value of over Rs. 350 million in 1971.

Significantly, the textile machinery industry in the country adds every year new dimensions to its product range. Beginning from blow room lines of carding engines and from high speed draw frames, fly frames and ring frames to doublers, the industry turns out complete requirements of the preparatory and spinning departments of textile mills. It also manufactures pirn winder, comb winder, sizing machines and powerlooms. In brief, the country is today capable of manufacturing the entire range of spinning, weaving and processing machines, even including combers whose production has started recently. As in the case of the Coimbatore firm, quite a few of the textile machinery manufacturers have collaboration arrangements with renowned machine makers abroad and they thus have the facility of access to most modern techniques. Sophisticated departments of textile machinery including fully automatic single spindle pirn winding machine, fully automatic wrap winding machine, super speed wrapping machine, autolooms for canvas and corduroy are also planned to be produced indigenously in large quantities.

AUTOMOBILE ANCILLARY EXPORTS UP

Several industrial units in India are presently engaged in the manufacture of a comprehensive range of automobile ancillaries, required in repairs and for replacements. Besides the developing countries, an increasing number of sophisticated markets abroad too are looking towards India for supply of these items because of their distinct characteristics of price competitiveness, quality and marketing ability. During 1971-72, India's exports of automobile parts and ancillaries amounted to Rs. 51.95 million. During the first half of 1972-73 (April-September 1972), the exports were of the order of Rs. 26.55 million. Yugoslavia, Sri Lanka, Arab Republic of Egypt, Sudan, U.K., Zambia, Nigeria and Bangladesh were the leading destinations.

Among the various manufacturing units spread over the country, M/s. Motor Industries Company Limited (MICO), Bangalore has to its credit an improving export business year after year. From Rs. million in 1969, the company's exports rose sharply to Rs. 8 million in 1970 and further shot up to over Rs. million in 1971. During 1972, the exports are estimated to reach an all time high record level of Rs. 17 million. In recognition of the outstanding export performance in 1970-71, MICO was awarded a gold medal by the Mysore State Export Promotion Advisory Board. The firm's bulk of exports are made to West Germany and countries in South East and West Asia.

The Bangalore firm manufactures spark plugs for petrol engines and fuel injection equipment for diesel engines. In addition, it manufactures other automobile, household and industrial products catering to the requirements of agricultural as well as road, rail and sea transport. Their products are well received at home and abroad for their quality and engineering designs. MICO products, are particularly sought after by the manufacturers of road vehicular diesel engines, stationary diesel engines (mainly used for agricultural pumping sets) and petrol engines (used in motor cars, motor cycles, scooters and agricultural sprayers).

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The firm's construction of a new plant at Nasik in Maharashtra is in progress. It has been given a licence to expand capacity in respect of most of the products that it manufactures. The company has entered into a technical collaboration agreement with M/s. Robert Bosch GmbH of West Germany for five years commencing from January 1, 1971.

India offers a comprehensive range of automobile ancillaries and parts to world markets. These include nozzles, delivery valves, filters (oil, air and fuel), motor starters, wheels and rims, shock absorbers, spark plugs, brake assembly, ignition coils, voltage regulators, distributors, crankshafts, pistons, cylinder liners, engine valves, carburettors, fuel pumps, radiators, cones, cops and heat exchangers and hydraulic pumps. The indigenous content in these manufactures is improving from year to year.

MARINE PRODUCTS TO JAPAN

Endowed with a vast coast line and fishable waters, India offers a broad range of marine products worthy of satisfying the demands of buyers at home and abroad. Marine products occupy a prominent place among India's major foreign exchange earners.

Foreign exchange earning in the line amounted to Rs. 414 million in 1971-72. Frozen prawns and shrimps constituted the main item during the year having fetched Rs. 357.35 million and accounted for more than 85 per cent of the total value. Japan, India's biggest customer for these products imported frozen shrimps and prawns valued at Rs. 223 million during the year, followed by USA at Rs. 110 million.

Dry and salted fish, dry prawns and shrimps, pomfrets, lobsters and fish preparations in air tight containers were the other varieties in the line active in exports. Sri Lanka, UK, USA, France, German Democratic Republic were the prominent destinations for these products.

Adding to the export endeavour of the marine products industry, M/s. Konkan Fisheries Private Limited, Chowgule House, Marmugao Harbour, Goa recently secured an order worth Rs. 250,000 from Japan for supplying frozen shrimps and pomfrets. Quantumwise, 18950 kg. of these products are to be supplied to Japan.

INDIAN ASSISTANCE TO IRAQ'S RAILWAY PROJECT

An agreement with the Government of Iraq for carrying out an economic study for the 530 kms. long Railway project from Baghdad to Akasa via Hshaibah is to be signed soon by the Government of India. An Indian Delegation is on visit to Iraq for the purpose.

The agreement will also cover a feasibility cum cost study for the portion of the project between Hshaibah and Akasa, a distance of about 130 kms. Akasa is the centre of phosphate mining in Iraq.

The Indian Railways have already carried out a preliminary feasibilty cum cost study of the Railway project between Baghdad and Hshaibah, a distance of slightly over 400 kms. The cost of the study was partly borne by India and the local expenses in Iraq were met by the Iraqi Government. The feasibility study indicated that the most preferred alignment, in the standard gauge, will cost about 60 million Iraqi Dinars including ancillary facilities.

EXPORT PERFORMANCE AND POTENTIAL

AWARDS FOR EXPORT PERFORMANCE

The Ministry of Commerce have recently announced Awards for outstanding performance in the field of exports for 1969-70. The nine winners of the Awards are : Messrs Banaras Art House Limited, New Delhi; Bank of India, Bombay; Messrs Chemco Supply Corporation, Bombay; Messrs Esmario Export Enterprises, Quilon; Messrs Gedore Tools (India) Private Limited, New Delhi; Messrs Kamani Engineering Corporation Limited, Bombay; National Mineral Development Corporation Ltd. (NMDC), Hyderabad ; Messrs. Nava Bharat Enterprises (P) Limited, Guntur, and Messrs Tata Exports Limited, Bombay.

On the recommendations of the Selection Committee, 30 winners of Certificates of Merit have also been announced. They are : Messrs Atlas Copco

(India) Private Limited, Bombay; Messrs Caprihans (India) Pvt. Ltd., Bombay; Messrs Chandra Industries, Bombay; Messrs Cochin Company Pvt. Ltd. Ernakulam, Cochin; Messrs Colour Chem. Ltd., Bombay; Messrs E. Hill & Co. Pvt. Ltd., Mirzapur; Messrs. Fancy Dyeing & Printing Works, Farrukhabad; Handloom Export Promotion Council, Madras; Messrs Hansa Agencies, Jullundur City; Messrs Hoechst Dyes & Chemicals Ltd., Bombay; Indian Jute Mills Association, Calcutta; Indian Oil Corporation Ltd. Bombay; Messrs Industrial Trading Co., Bombay; Messrs J. Glass Industries Pvt. Ltd., Poona; Messrs. Kashmiri Lall Kasturilal & Co., Amritsar; Messrs Lohia Jute Press Pvt. Ltd., Calcutta; Messrs Madura Mills Co. Ltd., Madurai; Maharashtra Small Scale Industries Development Corporation Limited, Bombay; Messrs Nagesh Hosiery Mills, Ludhiana; Messrs P. Mittulaul Lalah & Sons, Madras; Messrs Peirce Leslie India Ltd. Calicut; Messrs Precious Industries, Bombay; Messrs Radha Silk Mills, Bombay; Messrs Sudarshan Chemical Industrial Pvt. Ltd., Poona; Messrs T. Abdul Wahid & Co., Madras; Messrs. Tata Finlay Limited, Bangalore; Messrs. Indian Textiles Co. Pvt. Ltd., Calcutta; Messrs V. N. Surulivel Nadar & Bros., Bodinaya-Kanur (Tamil Nadu); Messrs Vijayalaxmi Cashew Co., Quilon, and Messrs Walker Anjaria and Sons Private Ltd., Jamnagar.

This is the third set of Awards being made in respect of export performance. The Awards were first instituted in 1969 in recognition of achievements during the period October 1966–March 1968. The scheme contemplates the grant of not more than ten Awards and a number of Certificates of Merit every year to firms, institutions and organisations for outsanding performance in promoting exports. The Awards are in the form of a rotating trophy and each Award winner is also presented with a smaller replica of the trophy for retention.

FOOTWEAR EXPORTS UP

Among the leather products that are supplied overseas from India, footwear occupies a significant place. During 1971-72, it brought in foreign exchange to the tune of Rs. 117.59 million as against Rs. 114.40 million in the preceding year. During the first half of 1972-73 (April-September 72) the exports were of the order of Rs. 56.32 million, which registered improvement over the export value of Rs. 51.20 million during the corresponding period of the preceding year.

During the period under review of 1972-73, all leather closed–toe–footwear constituted the major item of export in the line having fetched Rs. 23.18 million (920777 pairs). U.S.S.R. topped the list of importers having bought worth Rs. 19.19 million (568273 pairs) accounting for the bulk of offtake. Nepal was the next best destination which purchased worth Rs. 1.60 million (162169 pairs). Among other buyers, U.S.A., U. K., Zambia, Bulgaria and Australia were prominent.

With Zambia occupying the position of leading buyer absorbing worth Rs. 3.36 million (830687 pairs), the variery of rubber soled upper canvas footwear netted Rs. 13.84 million. Quantum–wise, 3.33 million pairs were supplied abroad. U. K. constituted the next best market for this variety having purchased worth Rs. 2.81 million (0.82 million pairs) followed by U.S.S.R. at Rs. 1.65 million (229375 pairs) and Bulgaria at Rs. 1.52 million (169650 pairs)). Netherlands, Sierra Leone, Nigeria, Denmark, Federal Republic of Germany, Canada and France were the other important markets.

All leather open-toe-footwear is yet another category prominent in exports which earned Rs. 12.93 million. U.S A. was the principal importing country having absorbed 977632 pairs valued at Rs. 7.74 million accounting for more than 50 per cent of the total export value of this category. Australia, U. K., Canada, Nepal, Bahrien Islands and Bulgaria were among other buyers.

Besides these principal varieties, rubber soled upper leather footwear, leather soled footwear, leather soled and embroidered upper footwear, other footwear with sole and upper of rubber or plastic, rubber or plastic footwear, footwear with other soles and cricket pads were the other varieties active in exports.

Exports of all types of footwear have been canalised through the State Trading Corporation (STC) from November 14, 1972. Prior to that date only footwear, whose uppers were made wholly or partly of leather, were canalised. Besides footwear, exports of all categories of semi-processed hides and skins and crushed leather have also been canalised through the STC from December 14, 1972. The canalisation of these items through STC has been done with an objective to export leather more in the finished form and leather manufactures, instead of exporting semi-processed hides and skins.

During 1971-72, India's exports of leather and leather manufactures were of the order of Rs. 907.66 million as against Rs. 721.82 million in the preceding year. Of this, leather exports alone amounted to Rs. 901.42 million as against Rs. 715.88 million in 1970-71.

In the organised sector, during 1971, there were 8 units engaged in the production of Western type of leather footwear. As against their installed capacity of 13.85 million pairs during the year, the actual production was estimated at Rs. 119 million (8.11 million pairs). In the same year, 8 units were engaged in the manufacture of Indian type of leather footwear having a capacity depending upon demand and their actual production was of the order of Rs. 65 million (7.83 million pairs).

INDO-BANGLADESH RAILWAY AGREEMENT

An agreement on the utilisation of an Indian credit of Rs. 80 million for the Bangladesh Railway was finalised between India and Bangladesh recently between the representatives of Indian Railway Board and Bangladesh Ministry of Communications.

The credit of Rs. 80 million is to be utilised for the supply of railway stores like bridge girders, permanent way materials, flotilla including pontoons, passenger jetties, barges, engineering stores, signalling telecommunication equipment and locos and wagons fittings and also for execution of civil works including restoration of bridges and track and restoration of signalling and telecommunication system.

The stores are expected to be delivered by the Indian Railways to Bangladesh Railways by March 1974 and the works will be executed by July, 1974.

The credit also covers the stores already supplied to the Bangladesh Railways and works carried out in Bangladesh by the Indian Railways so far.

Among the important items covered by the agreement are the restoration of the Bhairab bridge over the Meghna river which will provide a direct rail connection between Dacca and the Port of Chittagong and doubling of the track on the Hardinge Bridge by July, 1974. The temporary restoration of one line on the Hardinge Bridge has already been carried out by the Indian Railways on October 12, 1972.

An agreement on the inter-change of railway wagons between the two countries was also signed. It provides for inter-change of wagons carrying goods both on Government as well as private account at six points including one near Malda in North Bengal.

EXPORTS OF CASHEW KERNELS

The export value of cashew kernels from India during 1972-73 touched a record level of 65950 tonnes valued at Rs. 685.30 million as against 60,380 tonnes valued at Rs. 613.30 million in 1971-72.

U.S.S.R. topped the list of importers during 1972-73 with an intake of 5220 tonnes more than in the preceding year. Exports to the United States constituted 33.3 per cent of total turnover. Canada, Federal Republic of Germany, German Democratic Republic, Japan and Hong Kong continue to be the other major markets for Indian cashew.

There was decline in the export of cashew nut shell liquid in 1972-73 at 4980 tonnes valued at Rs. 5.75 million as against 5515 tonnes valued at Rs. 6.24 million in the comparable periods.

PROGRESS OF ANDHRA PRADESH TRADING CORPORATION

The Andhra Pradesh Trading Corporation, Hyderabad, registered an improved turnover of about Rs. 25 million during 1972-73 as against only Rs. 1.6 million in the preceding year.

In 1972-73, this Corporation supplied tobacco to the State Trading Corporation of India for export. It has also exported about 800 special types of handloom carpets made in the State to Europe through the

Handloom and Handicrafts Export Corporation. A sample order for export of lungis to Bangladesh and two orders for export of handicrafts to Europe were successfully executed by them.

The Corporation has plans to concentrate on select traditional export items covering handloom and handicrafts, various agricultural products and minerals. In addition, they prepared a scheme for export of non-traditional engineering items produced in the State, particularly those being manufactured by the small scale sector. The State Trading Corporation of India appointed the Andhra Corporation as an agent for distribution of some of the canalised items. This move is expected to help the small scale industry in the State.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

FACTS ON TEXTILE INDUSTRIES

As at the end of June 1972 there were 394 spinning and 290 composite mills in India's *cotton textile industry* with a total installed capacity of 18.32 million spindles. There were 207,800 looms in the composite mills. The total production of cotton cloth by cloth mills and decentralised sector in 1971 was of the order of 7356 million metres. In the first half of 1972, the production was 3950 million metres.

Exports of cotton textiles which suffered a setback during 1971-72, registered a pronounced upward swing in ·1972-73. The export target for different varieties of cotton textiles including cotton yarn was fixed at Rs. 1,255 million for 1972-73 exclusive of exports to U.S.S.R. under the Cotton Conversion Deal which would yield a net earning of Rs. 165 million. In the period January-November, 1972, the cotton textile exports were estimated at Rs. 1287 million as against only Rs. 965 million in the same period of 1971, thus showing a 33 per cent increase. During the first eleven months of 1972, exports of cotton piecegoods were Rs. 710 million compared to Rs. 593 million, in the same period of 1971. The export of cotton yarn almost doubled from Rs. 110 milllion to Rs. 203 million in the comparable periods. Similarly, export of cotton apparel revealed improvement from Rs. 104 million to Rs. 181 million. Exports of other cotton manufactures were Rs. 188 million compared to Rs. 154 million.

Exports to the EEC registered significant rise from 8.8 million sq. metres in the first eleven months of 1971 to Rs. 23.3 million sq. metres in the same period of the subsequent year. Both France and Federal Republic of Germany increased their offtake substantially. While cotton yarn exports to U.K. registered an increase from Rs. 5.83 million lbs. exports of cotton cloth came down from 117 million sq. yards to 102 million sq. yards. Exports to U.S.A., particularly of handloom fabricated and garments were brisk. Pursuant to an agreement entered into between India and U.S.S.R. for export of cotton textiles against supply of Russian cotton, the Cotton Textiles Export Promotion Council finalised a contract with M/s. Exportjon, Moscow for supply of 126.6 million metres of fabrics and 5 million pieces of towels during June, 1972—March, 1973 against import of 20,000 tonnes of Russian cotton. The exports effected up to the beginning of December 1972 were to the tune of Rs. 64.3 million metres of fabrics and 1.4 million pieces of towels.

The Government have taken certain steps to sustain and increase exports of cotton textiles. For instance, the Indian Cotton Mills Federation (ICMF) introduced a scheme of obligatory exports for export of 115 million sq. metres of cloth to U.K. for the period July-December 1972. The objective of the scheme was to improve export performance to U.K. so that India could bargain for an adequate quota for export of textiles to the enlarged EEC of which U.K. became a member effective from January, 1973. The Federation also evolved a scheme requiring composite mills to export 15 per cent of their production during 1973. It was also decided to set up a public sector corporation to supplement efforts for export of textiles. ICMF has to initially administer exports to quota countries and other bulk deal destinations.

The cotton crop during the cotton season-September 1971—August, 1972 was of the order of 6.6 million bales which was the highest yield ever. Apart from satisfactory monsoon rains, a scheme of intensive cotton production contributed to the improved cotton output. In the current cotton season ending September 1972—August 1973, cotton crop is essimated at 6.2 million bales, of which 0.5 million bales more of long staple cotton will be cropped. There are certain cotton textile spinning and weaving units which consume cotton of long staple variety and as such indigenous production is not sufficient to meet the demand of such type of cotton which had to be imported from abroad; during the cotton season 1971-72, 640,000 bales were released for import from Sudan, Arab Republic of Egypt and other global sources. Fumigation of imported cotton has recently been made compulsory by the Ministry of Agriculture, Government of India.

The *textile machinery industry* producing complete machines has an annual installed capacity of about Rs. 450 million against a licensed capacity of about Rs. 670 million. The value of production of complete machines of major textile machinery manufacturers was of the order of Rs. 360.4 million in 1971. During the first three quarters of 1972 ending September, the production was of the order Rs. 204.3 million. The anticipated production value of complete machinery during the entire calendar year of 1972 is estimated at about Rs. 272 million. The production of spares and accessories in 1971 was of the value of Rs. 304 million and the anticipated production of these spares and accessories in 1972 has been placed at Rs. 343.40 million. Thus the total production value of textile machinery industry during 1972 is estimated at Rs. 615 million.

During 1971-72, the value of exports of textile machinery, spares and accessories was Rs. 60.50 million. The import necessity for complete machinery has been gradually declining which was of the order of Rs. 33.46 million in 1970-71 and in the subsequent year Rs. 15.5 million. This would reflect the progress in import substitution for the complete machinery.

The Textile Committee undertakes textile inspection for mill-made cotton cloth, yarn, made-up articles, handloom fabrics, cotton hosiery, sewing thread and handloom made ups in the cotton textile industry as well as art-silk fabrics, garments, hosiery, non-fabrics and yarn as also woollen, hosiery, shawls and blankets, woollen yarn, woollen mixed bed spreads and polyester yarn. Pre-shipment inspection of polyester - cotton and polyester viscose blended fabrics, woollen, worsted fabrics and mixed woollen fabrics and man-made fibre fabrics were all brought under compulsory inspection in the course of 1972. In respect of material for which inspection is not compulsory but which is eligible for draw-back and other export benefits, inspection is carried out on a voluntary basis. The Textile Committee was also authorised by the Government of India to issue certificate of origin in respect of textile manufactures under the Generalised System of Preferences (GSP). The Committee also continues the inspection of textile machinery installed at the mills with respect to its performance and quality.

To ensure scientific evaluation of the quality of textile goods, including textile machinery and component as well as to expedite the availability of test results, a Central Laboratory at Bombay has started functioning.

During January-November, 1972, *jute goods* production of 1.15 million tonnes was marginally higher than the corresponding figure for 1971. While production of hessian and sacking went up, there was a setback in the carpet backing production mainly due to sluggish export demand. Exports of jute goods in the period reviewed at 495,000 tonnes were lower by about 17 per cent than those in the same period of 1971. Following a recent review, Government have reduced the export duty on primary carpet backing weighing 9 oz and above per sq. yard from Rs. 700 to Rs. 300 per tonne effective from November, 1972. Effective from the last week of May, 1972, the price of carpet backing (basic construction) was fixed at Rs. 4550 per tonne.

In early 1972, the Government allowed export of 300,000 bales of raw jute to meet in part the acute shortage of raw jute in the world markets.

The *jute mill machinery industry* made progress in modernisation of its machinery and the machinery imbalance particularly in the spinning has been corrected to a large extent. Presently, bulk of the industry's requirements of jute mill machinery is being made from indigenous sources. Recently, a process for conversion of slip drafting into double apron drafting has been successfully developed by an indigenous unit and efforts are now being made to commercialise its production. While considerable progress has been achieved in the manufacture of components, spares, accessories of jute mill machinery indigenously, vigorous efforts are also being made to persuade the existing units to gear up production level. The total value of jute mill machinery, spares and accessories in the first ten months of 1972 (January-October) was of the order of Rs. 54.4 million as against Rs. 39.7 million in the same period of 1971.

The present installed capacity in the woollen industry is 63,632 spindles and that of woollen power looms is

4203 numbers. The installed capacity of worsted spindles is 147,200. The imports of wool, shoddy rags, wool waste and synthetic fibre for woollen industry have been canalised through the State Trading Corporation of India since October 1967. The Government of India have revised the policy for allocation of raw materials. Before October 1967, the allocations to about 65 spinning and composite mills were made on the spindleage/past consumption basis. Under the revised policy, only 20 per cent allocations are to be made to the worsted mills for their spinning capacity and separate allocations are made against their powerlooms, hosiery and grey hand knitting yarn processing units.

Two units have been recently approved for setting up plants for the manufacture of tufted carpets. Proposals for two or three more units for the manufacture of this item, which is to be based on indigenous raw material and has considerable export potential, are under consideration. To meet the existing and anticipated demand for wool tops, an additional wool combing capacity of 25 million lbs is being created. 50,208 unauthorised worsted spindles have been regularised so far.

Some of the machinery required by the woollen industry is being manufactured indigenously. For cutting down the cost of production, it is however felt that imported machines would also be needed to modernise the industry. The total modernisation requirements are expected to be of the order of Rs. 220 million of which Rs. 140 million would be in the form of foreign exchange.

The *coir industry* in India provides employment to about a million people. Because of labour intensive nature of production operations, such as collection of coconut husks, retting, extraction of fibre, spinning of yarn and manufacture of mats and mattings, the employment potential of this industry is substantial. During January-October 1972, the export of coir and coir goods earned foreign exchange worth Rs. 118.3 million, an increase of Rs. 15.5 million compared to the earning of Rs. 102.8 million during the same period of the preceding year. The volume of exports of coir and coir goods increased from 37,330 tonnes to 40,396 tonnes in the comparable periods. Exports of coir fibre, coir yarn and curled coir increased both in terms of quantity and value while the exports of coir mattings, rugs, carpets and ropes declined slightly. The export value of coir mats recorded increase.

Coir yarn in non-baled form was brought under the purview of quality control and preshipment inspection effective from June 1972. From the same period, coir mattings were also brought under quality control.

As regards the *man-made fibre industry* the installed capacity of rayon staple fibre is in the neighbourhood of 68 million kg per annum while rayon filament yarn is 35.5 million kg, acetate rayon filament yarn 3.5 million kg, nylon filament yarn 9 million kg, and polyester filament yarn/fibre 6 million kg. The art-silk weaving industry in the country is by and large spread over in the decentralised sector comprising about 103,000 powerlooms and 130,000 handlooms. In addition to the powerlooms and handlooms, there are about 630 warp/raschel/lace knitting machines and about 114 embroidery machines installed in the country. Besides, in the Fourth Five Year Plan period, 40,000 powerlooms for producing artsilk and synthetic fabrics have been earmarked for installation. There has been a rise in export of artsilk fabrics in recent months.

The development of *sericulture industry* in India was entrusted to the Central Silk Board. Four research and three service stations and sub-stations of the Board are responsible for sericultural research, training and supply of basic silk worm seed of improved strains. The export of silk goods during January-October 1972 was of the order of Rs. 60.4 million against Rs. 56.3 million in the same period of 1971. Out of this, mulberry silk goods accounted for Rs. 49 3 million and tasar Rs. 11.2 million in the period under review in 1972. Silk waste fetched Rs. 4.43 million against Rs. 3.98 million in the comparable periods.

The Central Sericultural Research and Training Institute, Mysore proved beyond doubt that bivoltine can be successfully reared under conditions prevailing in the State of Mysore. Among the experiments undertaken by the Central Tasar Research Station, Ranchi are the new techniques of rearing, termination of diapouse, specific combing ability studies and cooking technique of cocoons.

To promote exports of natural silk goods, several measures have been taken among which streamlining of the Import replenishment scheme is particularly worth mentioning. A raw material bank was set up by the Central Silk Board to make available tasar cocoons and tasar waste to the manufacturer-exporters at steady prices for production of export fabrics.

PROGRESS IN HINDUSTAN STEEL'S PRODUCTION

With total net assets of Rs. 10,270 million, M/s. HSL, Ranchi (Bihar), a Government of India undertaking, is the largest industrial concern in India. It is ranked twentyninth among the leading steel producers in the world.

During 1971-72, the production of steel ingots from HSL's three mild steel plants at Bhilai, Durgapur and Rourkela totalled 3.48 million tonnes as against 3.61 million tonnes in the preceding year. This accounted for 55 per cent of the total production of steel in India. The capacity utilisation in the year was of the order of 59 per cent. HSL also produces mild steel products, special and alloy steel, fertilizers and the byproducts of coke oven plants.

While the net sales of HSL increased by 7 per cent to Rs. 4451 million in 1971-72 from Rs. 4161 million in 1970-71, the company's exports amounted to Rs. 219 million as against Rs. 530 million in the comparable years. The exports in the later year constituted 86 per cent of the total iron and steel exports from India. The steep fall in exports was due to a deliberate decision taken by the Government and by the company to restrict exports in order to meet the increasing home demand particularly for bars and structurals. Since 1958-59 the total exports of HSL amounted to Rs. 2164.20 million.

The Plant-wise performance of HSL during 1971-72 would indicate that the output of steel ingots and saleable steel respectively were 1.95 million tonnes and 1.57 million tonnes in the Rs. 4120 million worth of Bhilai Steel Plant. The Rs. 4090 million Rourkela Steel Plant produced 0.82 milllion tonnes of ingot steel and 0.60 million tonnes of saleable steel during 1971-72. The performance of the Rs. 2760 million Durgapur steel plant indicates that the production of steel ingots and saleable steel were of the order of 0.7 million tonnes and 0.43 million tonnes respectively in 1971-72.

The Alloy Steel Plant at Duragpur produced finished steel to the tune of 34210 tonnes in 1971-72. The Rourkela Fertilizer Plant doubled its production of calcium ammonium nitrate in 1971-72 as compared to previous year. The throughput of raw coal was 4.58 million tonnes and the output of washed coal was 3.49 million tonnes at the Central Coal Washery. The Central Engineering and Design Bureau, under the management of HSL, is today one of the foremost design and consultancy organisations in India. Its assignments for feasibility reports, detailed project reports and consultancy services include Vijayanagar steel plant, special steel plant at Kanpur, smelter and fabrication complex at Korba aluminium project, expansion of Bokaro steel plant, refractory plant for Tamil Nadu Industrial Development Corporation and the second sintering plant at Rourkela.

Recently, a steel holding company, Steel Authority of India Ltd. (SAIL) has been formed for guiding and directing the operations of all major public sector undertakings connected with the Steel Production, including the HSL.

INDIA IS WORLD'S SECOND LARGEST PUBLISHER

India is the second largest publisher of daily news papers in the world, according to the latest available data published by the United Nations Educational, Scientific and Cultural Organisation (UNESCO). The Indian Press has a total of 821 dailies and 68 triweeklies and biweeklies, 3708 weeklies and 7921 other periodicals, at the end of 1971. The total circulation of newspapers was of the order of 29.62 million, of which the share of dailies was 9.1 million and weeklies was 8.1 million.

As many as 3964 newspapers (32.4 per cent of the total number ie 12,218) are published from the four metropolitan cities of Delhi, Calcutta, Bombay and Madras. While the total circulation of English Papers commanded 29.62 million, 100 newspapers were in the top circulation bracket (above 50000 copies) including 44 in the circulation category of over 100,000. The circulation of English language papers was of the order of 7 million in 1971 as compared to 7.17 million in the preceding year while that of Hindi papers advanced to 6.04 million.

The highest circulation attained by a daily newspaper in 1971 (for a single edition paper) was 308315 for Ananda Bazar Patrika (Bengali) in Calcutta. The highest circulation attained by a periodical in 1971 was 374375 by Kumudan in Tamil from Madras. Among multi-edition dailies, the highest circulation of 462010 was claimed by the seven-edition, Indian Express.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

FIBROUS GYPSUM PLASTERBOARD

Fibrous gypsum plaster board, a commercial lining material used in Australia and New Zealand and known for its high thermal insulation and fire resistance properties, consisting of 12 mm thick board of set gypsum plaster reinforced with organic fibre, has been developed by the Central Building Research Institute (CBRI) Roorkee. It is a low cost substitute for plywood and fibre boards of the insulating callotex type, used for lightweight partitions and false ceilings. This may also be used for surfacing in place of plaster for dry and faster methods of construction.

In the method of casting of fibrous gypsum plasterboard, a steel mould is laid over a concrete casting table having smooth troweled surface. Calcined plaster is mixed with water to form this uniform slurry. The slurry is poured and evenly spread in the mould to 4 mm. thickness. Teased sisal fibre, about 250 grams per square metre, is then spread over the surface. The fibre near the edge is pressed into the plaster by hand. The remaining slurry is then poured, levelled and allowed to set. The product is demoulded after 2 hours and dried in wooden racks in air.

At present the demand is being met by fibre board, A. C. sheets etc., which are quite expensive. This product will have sufficient demand in public buildings where there is a need for ceiling of light weight.

A pilot plant of the capacity of 10 sq. m. per day, plaster-board has been working in the CBRI for the last 1 month and about 100 plasterboards each of the size 120 x 60 cm. x 12 mm. have been made. These boards have been used for ceiling in a model house and their performace has been found satisfactory. The plasterboard complies with Australian Standard Specification A. S. Number A 44-1950, CA 22-1950.

Raw Materials required in the casting of this product are gypsum plaster (purity not less than 75 per cent), sisal fibre - first grade and stripping agent colourless. All these raw materials are available indigenously. The Gypsum plaster is a cheap material and is obtained by calcining ground gypsym either in an open mild steel sam or in an enclosed steel kettle. The design of the kettle is available with the Central Building Institute. It is estimated that 1200 million tonnes of reserves of gypsum are available in the country. Out of it 1000 million tonnes are in Rajasthan alone. The Sisal fibre found satisfactory for reinforcement is available from Nildamgri Sisal Estate, Sambhalpur, Orissa. A small quantity is also required for stripping agent for plasterboards.

A standard transverse bending test was performed by supporting 30 x 30 cm. specimen of plasterboard on 25 cm. space and loading at the centre at a rate of 5 kg. per minute. The minimum breaking load should be 34 kg.

CORROSION INHIBITORS DEVELOPED

Nitrosol and Nitrosilate - corrosion inhibitors—for addition in the cutting oil emulsions for prevention of staining mild steel, low carbon alloy components and high carbon-cast iron components have been recently developed by the Defence Research Laboratory (Materials) Kanpur. Nitrosol is recommended to be used in 0.2 per cent wt./v. They increase the type of cutting oil emulsions and impart better emulsifying property. Estimated demand for Nitrosol and Nitrosilate is approximately 10,000 kgs. each.

The raw materials required are readily available indigenously. All equipment required for the projects are simple. The process is simple and involves only mixing of ingredients and packing.

EXPORT TREND IN ENGINEERING GOODS

Export Products	In million rupees	
	1972-73	1971-72
	April-January	
Bicycles and Parts	87.50	69.40
Electric Wires and Cables	103.85	92.30
Auto and Auto Parts	113.45	120.05
M. S. Pipes, Tubes and Fittings	67.50	57.70
Hand Tools and Small Tools	65.75	48.35
Diesel Engines and Parts	50.00	26.20
Transmission Line Towers and Poles	43.05	27.80
Jute, Textile and Knitting Machinery	37.75	52.60
Structural Fabrication including P. S. Tanks	26.90	20.75
Railway Coaches, locos, wagons and parts	24.30	56.90
Other Industrial Machinery including boilers and excavators	22.40	16.25
Dry and Storage Batteries	21.75	20.25
Machine Tools	18.11	24.95
Electric Fans and Parts	15.70	12.40
Oil lamps and Stoves	11.05	7.20
Sugar Mill Machinery	10.55	7.85
Water Fittings and Sanitary Fittings	8.70	6.25
Air Conditioners, Refrigerators, Water-Coolers and ice machinery	9.05	7.80
Scientific and Surgical instruments	8.65	8.00
Bright Steel Bars and Shaftings	8.60	7.15
Electrical Appliances and accessories	8.45	6.75
Aluminium Utensils and Capsules	6.60	5.20
Electrodes and Welding Equipment	5.35	3.95
Stainless Steel Utensils	4.25	2.70
Agricultural implements and Machinery	4.15	3.35
Gramophone Records	3.80	3.60
Cutlery	3.05	2.00
Brass and Copper Utensils	3.40	2.65
Wood Screws	2.90	1.80
Abrasives and Grinding wheels	2.85	2.15
Oil Mill Machinery	2.85	2.25
Public Address Equipment	2.60	1.80
Steel Trunks	2.35	1.55
Ball and Roller Bearings	2.00	1.40
Crown Corks	0.95	0.65
Total including other items	**1070.60**	**1005.80**

Source : Engineering Export Promotion Council, Calcutta.

EXPORT PERFORMANCE OF PUBLIC SECTOR UNDERTAKINGS

India's public sector undertakings engaged in the manufacture of a complex variety of products have come to substantially contribute to the country's export trade. Some of these projects have even succeeded in exporting technical know how and undertaking turnkey projects abroad. Most of them have bright records of import substitution.

Among the public sector undertakings engaged in heavy industries, the heavy electrical equipment manufacturing units have a special role to play in export trade. The Heavy Electricals (India), Bhopal which is engaged in the manufacture of heavy electrical equipment required for generation, transmission and distribution of power such as hydraulics, steam turbines, generators, motors and transformers succeeded in exporting equipment worth Rs. 1.54 million to various countries during 1971-72. In the year, this firm achieved certain technological achievements by successfully manufacturing the first motor amplidyne set in India required for controlling the output voltage and power factor of hydro-generators, developing the armatures for traction motors with new type of insulation (Kapton film insulation) and by successfully testing the 1,600 KVA series Reactor for Badarpur Thermal Power Project, this reactor being the biggest among non-magnetically shielded reactors so far made in India. The company have plans to export a part of the manufacture of primary insulating materials.

M/s. Bharat Heavy Electricals Ltd; (BHEL) have four units, namely, Heavy Pressure Boiler Plant, Tiruchi; Heavy Power Equipment plant and switchgear plant, Hyderabad and Heavy Electrical Equipment plant, Hardwar. The Tiruchi plant has collaboration arrangements with Czechoslovakia as well as M/s. Combustion Engineering of U.S.A. Newer types and ranges of boilers are being added to the production line and the plant is poised to build boilers incorporating modern features like welded wall construction, direct firing of coal using Bown Mills, Finned Economisers and close pitched Superheaters. Sophisticated boilers required for paper mills, and marine installations are also to be manufactured by the Plant. In consultation with the Atomic Energy Commission, the plant has also undertaken the manufacture of steam generation equipment required for the Madras Atomic Power Project.

During 1971-72, the plant succeeded in securing a contract from the National Electricity Board of Malaysia for the export of 120 MW oil fired Boilers at a contract value of Rs. 91.4 million in the face of stiff competition from other international suppliers.

The Heavy Power Equipment Plant at Hyderabad is designed to manufacture steam turbines and turbo-generators up to a total capacity of 900 MW per annum, with varying capacities upto 110 MW units, with Czech assistance. The Plant is undertaking a programme covering manufacture of centrifugal compressors and industrial turbo-generators.

The Switchgear unit of BHEL at Hyderabad has Swedish collaboration and is producing Air Blast Circuit Breakers and Minimum Oil Circuit Breakers. The tooling and manufacturing process for 33 KV at 66 KV range has already been stabilised and their production has increased in 1972-73. These types of breakers have been taken up for indigenous production for the first time in India as also improved its production of all types of breakers with minimum import content.

In collaboration with Russia, the Hardwar Unit of BHEL is engaged in the manufacture of Thermal Sets, Electric machines and Associated Control Gear. The Plant has secured orders for the supply of thermal hydro sets to various State Electricity Boards.

The Research and Development Organisation for Electrical Industry set up at Bhopal succeeded in a number of research projects. For instance, they developed and manufactured a Static Voltage Regulator for a 30 MW tubro generator, based on cent per cent indigenous know-how and components. A scheme for squirrel cage induction motors has been successfully designed, fabricated and tested. They have also developed heat exchangers using aluminium alloy materials as heat transfer surface. The results of this project go a long way to help the industry to substitute copper by aluminium.

The Indian Consortium for Power Projects Private Ltd. New Delhi earned gross foreign exchange worth Rs. 4.35 million in 1972-73. They hope to touch a figure of Rs. 10 million during 1973-74. The Consortium earned appreciation of the Tanzania Electric Supply Company for completing its contract worth Rs. 2.85 million well ahead of schedule.

While such is the bird's eye view of the public sector undertakings engaged in heavy electrical equipment manufacturing, the machine tools sector is another area where Governmental investment has brought in dividends. During the two decades of its activities, M/s. Hindustan Machine Tools Limited, Bangalore, has made a steady progress. In its five machine tool plants, HMT has been accounting for about half of the country's production of machine tools. It can, today, justifiably claim to be the single undertaking that produces the widest range of machine tools in the whole world. With the completion of the various expansion programmes now on hand, the firm hopes to record over the next five years an almost three-fold increase in its turnover. The design capabilities and potential of HMT have been recognised both at the national and international levels. A team of HMT's designers in collaboration with engineers from American Tools Works company (USA) has jointly developed a Centre Lathe C 21 first in their series of modern lathes for the world market. The company's engineers in co-ordination with the Central Machine Tools Institute and M/s. Bharat Electronics Limited, Bangalore are trying to evolve designs with numerical control systems for machine tools. The company, has accomplished a break-through by granting a licence to an internationally reputed firm, M/s. Wickman Machine Tools Ltd., Coventry, U.K. for the manufacture of Mini-Chuckers', a product which was designed and developed by HMT's engineers. The highlight of the agreement is that HMT is assured of a minimum royalty over a period of the agreement. The company has opened sales-cum-service centres in United States and Europe and has set up a branch of office in Australia. They are also setting up a small base shop in Luxembourg for the purposes of speedy execution of export orders and for direct selling of machine tools.

HMT continues to achieve progress in its drive for further diversification. The vertical diversification includes manufacture of sophisticated tools like multi-spindles, single spindles, copying lathes, gear hobbers, broaching machines, horizontal boring machines and numerical control machines. By undertaking the manufacture of tractors, printing machines, heavy duty presses and press brakes, die casting and plastic injection moulding machines, the company achieved diversification in a horizontal direction.

M/s. Bharat Pumps and Compressors Limited, Naini, Allahabad has been set up to produce reciprocating compressors and centrifugal and reciprocating pumps to meet the demand of fertiliser plants, steel plants, oil refineries, oil exploration and drilling and petrochemical plants. In 1973-74, the company is to have a plant capacity to manufacture 170 centrifugal pumps, 30 each of reciprocating pumps and reciprocating compressors. The company's sphere of production has been widened and it will also manufacture gas cylinders for industrial and medical uses and hollow tubular bodies for the automobile industry as well as porous mass to be filled in the dissolved acetylene cylinders.

One of the largest heavy engineering companies, M/s. Braithwaite & Co. (India) Limited, Calcutta, recently taken over by the Government of India, manufactures a wide variety of structural steelworks such as small sheds, power house structures, multispans and single span bridges of most modern designs, factory sheds for steel and other plants, power house structures, multi-storeyed buidings; wagons and freight cars for all types of railway transportation; cranes such as railway breakdown cranes, power cranes, wharf cranes, shipyard cranes, mobile cranes and overhead travelling cranes; jute machinery, power sweepers, road-rollers, precision machined components and grey iron castings and forgings. The company is currently executing a large order for Yugoslavia for the supply of 425 wagons. Besides the Yugoslav order, the company has on hand orders for the supply of Rs. 126 million worth of wagons to Poland and Rs. 12.88 million worth of wagons to Bangladesh. Also they have export orders pending for steel work for power station worth Rs. 2.8 million and for the overseas supply of cranes at a value of Rs. 4.5 million.

M/s. Gresham & Craven Co., of India (Private) Limited, Calcutta, which was recently takenover by the Government, has already entered the export market and secured an order from Thailand for the supply of 80 numbers of vacuum cylinders. Another export order from Bangladesh Government is anticipated by the firm. This firm produces rolling stock components, namely, vacuum brake equipment, ejectors, steam-brake valve and exhausters.

A Bombay firm, M/s. Richardson & Cruddas Ltd., which was also brought under Government's purview mainly produces fabricated structural grey iron castings, machinery for rubber and sugar industry, galvanised structurals for power transmission and railway points and crossings. The company has recently completed an order for the supply of railway points and crossings of a special design valued at Rs. 11.2 million to the Iran State Railways.

In the heavy engineering group, M/s. Heavy Engineering Corporation Limited, Ranchi has three plants, namely, a Heavy Machine Building Plant, with an installed capacity to manufacture 80,000 tonnes of heavy machinery and 25,000 tonnes of structurals per year, a Foundry Forge Plant with an installed capacity of 180,000 tonnes of gross production per year and a saleable production of approximately 120,000 tonnes; and Heavy Machine Tools Plant with an installed capacity to manufacture 278 machine tools, weighing 10,000 tonnes per year. The Heavy Machine Building Plant is designed to manufacture various items of heavy machinery including equipment required for coke ovens, blast furnaces, steel melting, crushing and grinding, rolling mills, cranes, excavators, and heavy oil drilling rigs. The Foundry Forge Plant was set up to meet the requirements of castings and forgings of the Heavy Machine Building Plant, and Heavy Machine Tools Plant as well as the requirements of other heavy engineering industries. The Heavy Machine Tools Plant is designed to manufacture various tools including centre lathes, radial drilling machines, horizontal boring and turning mills, vertical boring and turning mills, plano milling machines and cylindrical and roller grinding machines.

The Mining and Allied Machinery Corporation Limited, Durgapur is designed to manufacture various items of mining equipment like conveyors, coal cutters, mine locomotives, fans, pumps, and loaders. The diversification programmes attempted by the Corporation resulted in the manufacture of equipment which have been hitherto imported. The value of import substitution effected by the MAMC went up from a modest figure of Rs. 6500 in 1966-67 to Rs. 4.38 million in 1971-72. The import substitution is likely to be of the order of Rs. 30 million during 1972-73. The company's diversification programmes include the development, design and manufacture of equipment for bulk handling of raw materials at ports, winding and mineral testing equipment, conveyors and belts for steel plants, castings and forgings as well as gearboxes.

The range of manufacture at M/s. Triveni Structurals Limited, Naini, Allahabad, includes steel building structurals, hydraulic gates, penstocks, storage tanks, pressure vessels, steel bridges, L.D. convertors, heavy duty cranes and hoists. The plant has been set up with an installed capacity of 25,000 tonnes per year. Recently they have earned orders for three television towers, a large quantity of technological structures for power plants and transmission towers as well as an order for some pressure vessels. All these orders were placed by other industrial enterprises in India and resulted in heavy saving of foreign exchange drainage.

M/s. Tungabhadra Steel Products Ltd., Tungabhadra Dam, a joint venture of the Governments of Mysore and Andhra Pradesh, is mainly to manufacture hydraulic gates, hoists and pen-stock for river valley projects. But today the firm's manufacturing profile has been diversified to include transmission towers, building structurals, pressure vessels, tanks, gantry cranes, and EOT cranes.

M/s. Bharat Heavy Plates and Vessels Limited, Viskhapatnam produces, among others, heat exchangers, pressure vessels, digesters, columns, storage vessels, dished ends and technological structurals required by fertilizer, chemical and petro-chemical industries. The installed capacity of the plant is about 23,000 tonnes per annum of the total value of Rs. 200 million. The company is taking further steps towards diversification of production including manufacture of electrostatic precipitators and finned tube air coolers required by the process industry, forged high pressure valves and tonne containers for chlorine and sulphur dioxide.

A consortium of public sector undertakings viz. Engineering Projects (India) Ltd., New Delhi was set up in 1970 with an intention of taking up business connected with the supply of equipment for steel plants, fertilizer factories and other industrial projects by entering into contracts for the design, manufacture, inspection, supply, erection and commissioning of plants on a turnkey basis. The public sector undertakings that held shares in the consortium are M/s. Heavy Engineering Corporation, Ranchi, M/s. BHEL, Heavy Electricals (India) Ltd. Bhopal, Mining and Allied Machinery Corporation Ltd. Durgapur, Bharat Heavy Plates & Vessles Ltd., Vishakhapatnam, Triveni Structutals Ltd, Naini, Instrumentation Ltd. Kota and Hindustan Steelworks Construction Co. Calcutta.

Besides the projects under execution by the consortium, including, Kandla Fertilizer Handling Project Coke Oven Project, Raw material handing plant for Bhilai, etc. the consortium has submitted a number of tenders for projects on turnkey basis both within India and abroad. In collaboration with M/s. Oil India Limited, this firm has submitted recently a tender for setting up a compressor station and laying a pipeline in Indonesia. They have also submitted a tender for the setting up of a semi-integrated steel plant in Iraq. This company is negotiating a collaboration agreement with a West German firm for the manufacture of electric arc and reduction furnaces of 20 to 100 tonnes capacities in India.

While such has been the production and export performance of the public sector undertakings in India under the charge of Ministry of Heavy Industries, there are quite a few other public sector organisations under the aegis of the Ministry of Industrial Development.

M/s. National Industrial Development Corporation provides consultancy services for industrial development, including provision of services for economic development and planning, engineering of industrial projects and management of consultancy services. The Corporation is also extending its activities to new fields such as Pollution Control and Traffic Engineering. The mechnical and economic consultancy services rendered by the corporation have gained an increasing recognition by International agencies and foreign companies. They have been retained as turnkey consultants by the Government of Libyan Arab Republic for the establishment of a Steel Melting and Billet Casting Plant in Libya. In Iran, the Corporation continues to assist the Industrial Development and Renovation Organisation in that country. The United Nations Industrial Development Organisation has been increasingly using the services of NIDC which was appointed by them to carry out major long-range studies in Industrial Panning in Iran. The Nepal Industrial Development Corporation has utilised the services of the Corporation for a number of project studies. The Corporation also carried out feasibility studies for a few projects being considered for establishment by the Government of Sri Lanka. The value of consultancy services rendered by the Corporation during 1972-73 amounted to Rs. 7.81 million. Of this, foreign exchange earnings amounted to Rs. 1.23 million which is about 16 per cent of the total earnings from consultancy services in India.

The National Small Industries Corporation Limited rendered valuable assistance for the development of small scale industry during the first ten months of 1972-73, ending January 1973. The Corporation delivered Rs. 85.2 million worth of machines to small scale industries in the same period. It has placed orders worth Rs. 22.4 million for the supply of equipment. Both the supplies made and the orders placed include equipment of Indian, U. K., Japanese, West German and Rupee Area origin. The export division of the Corporation has been continuously exploring foreign markets and has achieved some success in export of engineering products to the Federal Republic of Germany and U.S.A. Concentrated efforts have been made to promote export of non-traditional products. Orders were secured from foreign buyers along with their specifications, designs and samples. The export division secured orders worth Rs. 5.5 million covering such items as c. i. pipes and specials, handtools, light engineering goods, bolts and nuts.

M/s. Instrumentation Limited, Kota has a Precision Instruments Plant at Kota and a Mechanical, Hydraulic and Pneumatic Instruments plant at Palghat. The Kota branch of the firm secured a prestigeous order valued at about Rs. 15 million against stiff international competition for the supply of instrumentation schemes for three units of Power Plants to be established at Port Dickson in Malaysia. The firm is actively planning further expansion and diversification and they propose to set up a second unit at Palghat for the manufacture of control valves and accessories.

M/s. National Insruments Limited, Calcutta, is another important public sector firm in the line of instruments production. The firm is engaged in the manufacture of various types of surveying, meteriological, scientific and industrial instruments. They have recently developed production range and taken up the manufacture of Infra Red equipment aud optical reading devices. Presently this firm is a leading manufacturer and supplier of Infra Red Equipment to Defence Services.

M/s. Bharat Ophthalmic Glass Limited, Durgapur is the only plant of its type in India producing ophthalmic glass blanks and lenses. The company has for the first time exported Rs. 400,000 worth of lenses to U.S.S.R. recently. They have plans to diversify the production range for the manufacture of some sophisticated glass

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items such as Tank Periscope Prisms and Snow Goggles for the use of Defence Forces. They have successfully developed optical glass blanks for Tank Periscope Prisms which is an import substitution item.

M/s. Hindustan Cables Limited, the only unit engaged in the manufacture of telecommunication cables in India, is currently implementing four schemes for expansion of capacity, namely, expansion of Dry core cables from 3200 to 8000 km. per annum, manufacture of Aluminium sheathed cables for a capacity of 1000 KM. per annum; manufacture of copper coated steel wires for a capacity of 2600 tonnes per annum and establishment of a second factory at Hyderabad for Dry core cables for a capacity of 5000 KM. per annum. The company made good progress in developing indigenous sources for raw materials which were hitherto being imported. Polythene discs, insulating material between centre copper conductors and outer copper tubes of 375 type coaxial interruption cable are being developed and manufactured. The cable factory is also engaged in the replacemect of imported insulating core wrapping paper for 375 coaxial cable and coaxial interruption cables with hard grade insulating PVC tape. They are also engaged presently in the development of insulating paper required for dry core telephone cables indigenously with the help of domestic Paper manufacturers. Some successful trial runs have already been made by the firm for insulating paper required for cable armouring. Efforts are also being made to develop electrolytic copper tape required for coaxial cable indigenously. Many items of the jointing and terminating materials required for coaxial cables which were hitherto imported are developed at home.

M/s. Hindustan Photo Films Manufacturing Company Limited, Ootacamund produces x-ray films at an average of 51,150 sq. meters during August-October. 1972 as against 24,155 sq. meters per month during April-July, 1972. In January, 1973, the firm's production has been further stepped up to 91,550 sq. meters and it is expected to have reached 150,000 sq. metres by February 1973. The company has also made significant recovery in the production of cine positive and bromide paper. Their future plans include expansion of X-ray with polyester base to 5 million sq. metres anvally, manufacture of colour films with a wider range of products, including graphic arts films, roll films and aerial film.

M/s. Tannery and Footwear Corporation of India Limited, Kanpur succeeded in exporting Rs. 1 million and Rs. 0.93 million worth of its products abroad respectively in 1971-72 and first half of 1972-73. While the Corporation's exports in 1969-70 were mainly to U.S.S.R., the later years witnessed a wider coverage. Export links with countries like U.S.A. U.K., Australia, Sweden, Germany, Italy, France, and Japan have been established. Also the export range of the company increased from mere sale of Sandals to a wider variety of products like wet blue, semi-finished and finished leathers, footwear uppers, etc. Their future plans include the setting up of units for the production of myrobalan extract powders, glue and gelatine from fleshings waste, canvas footwear and combination footwear. ☐

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OVERSEAS DEMAND FOR INDIAN BICYCLES

India ranks world's fifth largest bicycle manufacturer with an annual production of over 2.30 million numbers. Foreign exchange of about Rs. 7.0 million is earned annually through bicycle exports. It is claimed that out of every five cycles made in India, one is produced by M/s. Tube Investments (T. I.) Cycles of India, 11/12 North Beach Road, Madras. Equipped with one of the largest modern cycle factories in South East Asia, the firm has a record of sustained growth in export supplies.

M/s T. I. Cycles of India were the first Indian bicycle manufacturer to successfully tap the U. S. market on a regular basis. They have developed specific models and designs to suit the sophisticated demand of Americans. In 1967, the firm developed "Conqueror" for the North American market and shipped 400 bicycles to New York. This brand incorporated special features such as 3-speed gear hub with twist grip control, cable operated brake sets and adjustable handle bar.

The Madras firm has recently introduced certain other varieties in export market, such as the sports light roadster, and the three-speed light weight cycle. They will be soon exporting 5-speed and 10-speed racing models. The three-speed, five-speed, and 10-speed racing models manufactured by the firm were on display at cycle shows held at Los Angels and New York in February this year and raised quite a curiosity among American customers.

Meant both for gents and ladies, the 3-speed light weight model is equipped with 26″ x $1\frac{3}{8}$″ wheels, cable-operated brakes, adjustable tourist-bend handle bars, level-controlled 3-speed gears, lightweight frame and fork. The deluxe version of this model is equipped with chrome-plated mudguards and chainguards. The 5-speed racing model is equipped with wheels, brakes, handle bars as in the 3-speed model, level-controlled 5-speed derailer rear-wheel drive, chrome plated fenders, and circular spoke protector on rear wheel. The 10-speed racing model has 27″ x $1\frac{1}{4}$″ lightweight wheels, light alloy centre-pull cable brakes, bend raising handle bar on $2\frac{1}{2}$″ forward extension stem, 10-speed derailer drive mechanism with double chain wheel, and five-speed rear sprocket, professional racer saddle and circular chain guard and rear wheel spoke protector.

The other brands exported by the above firm to the West Asian and African markets are "Grand Champion" and "Kohinoor".

The Madras firm was the recipient of the coveted National Award for outstanding export performance for the year 1968-69.

Besides the above firm, there are nine more manufacturing units active in India for the production of complete bicycles. Their combined annual installed capacity is of the order of 3.33 million bicycles per annum. Over 30 units are engaged in the manufacture of bicycle parts with an estimated output of Rs. 105 million.

Recently another leading manufacturer-exporter, M/s. Atlas Cycle Industries, Sonepat succeeded in concluding a technical collaboration agreement with Tanzania for the manufacture of bicycles in that country. The firm had earlier concluded an agreement with a leading motor-cycle manufacturing firm of Tehran for the manufacture of 60,000 numbers annually.

SYNTHETIC RUTILE FOR EXPORT

About Rs. 20 million worth of synthetic rutile has been exported to the United States of America during 1971 and 1972. M/s. Dhragandhra Chemical Works, 241, Backbay Reclamation, Nariman point, Bombay has developed the new ilmenite-based raw material for pigments and succeeded in building up a new market for the same.

While Australia is the main source for the supply of natural rutile, a sort of synthetic rutile popularly known as titanium slag is being manufactured in certain advanced countries by electrically processing ilmenite. The Indian firm has developed an entirely new process by using its byproduct, chlorine, for substituting the use of electricity. The iron content of ilmenite gets dissolved when treated in chlorine. The residual ilmenite is upgraded so far its titanium oxide content is concerned. This content rises from about 60 per cent in the raw ilmenite to over 90 per cent through the chlorine process.

U. S. pigment manufacturers have found the new material better than the titanium slag that they have been using so far, it is learnt. The chlorine process was invented by the Indian company mainly based on indigenously available material. The plant, stated to be the first of its type in the world, not only solves the problem of utilisation of chlorine but is active on export front. The company's exports of synthetic rutile secured for it the award of Indo-American Chamber of Commerce.

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The capacity of the plant is 20,000 tonnes per annum. The company earned Rs. 8 million in 1971 and Rs. 12 million in 1972 through their rutile exports. Currently they have export orders for 12,000 tonnes to earn an estimated Rs. 12.5 million in foreign exchange in 1973.

STEEL WORKS TO MALAYSIA

M/s. Texmaco (Textile Machinery Corporation), 1-3, Brabourne Road, Calcutta, has recently made its first shipment of steel works for the stage III extension of Tuanku Ja power station at Pork Dickson in Malaysia. These exports involved, fabrication and erection of about 46,000 tonnes of welded steel works.

The boilers for the Malaysian project are being supplied by M/s. Bharat Heavy Electricals Limited, Tiruchirapalli and its instrumentation by M/s. Instrumentation Limited, Kota.

The Calcutta firm has recently entered into the field of bridge engineering. They are now exploring export possibilities of hydraulic structures for barrages and dams.

BARYTES AND BENTONITE ON EXPORT FRONT

India's export of crude fertiliser and crude minerals excluding coal, petroleum and precious stones, brought in foreign exchange to the tune of Rs. 210 million in 1971-72. During the first half of 1972-73 (April-September 1972), the exports in the line amounted to Rs. 126.90 million as against Rs. 109 million during the corresponding period of the preceding year.

Among a wide range of crude minerals exported during 1971-72, Barytes (excluding barium oxide) and bentonite emerged as promising export items. Their export value during the year under review was of the order of Rs. 5.23 million and Rs. 0.63 million respectively. Saudi Arabia constituted the major destination for the items, having absorbed worth Rs. 3.82 million and Rs. 0.28 million. China Republic, Dubai, Iraq, Japan and Italy were prominent among other buyers of barytes while Qatar, Sudan, Muscat, Thailand and Sri Lanka were the other significant purchasers of bentonite.

During the first six months of 1972-73 (April-September 1972), barytes (excluding barium oxide) netted Rs. 3.19 million while Bentonite fetched Rs. 0.91 million. Saudi Arabia again topped the list of buyers of barytes having bought worth Rs. 2.03 million while Qatar was the leading buyer of bentonite having imported worth Rs. 0.27 million.

M/s Chemco Supply Corporation, Khorshed Bldg., Pherozshah Mehta Road, Bombay, one of the firms engaged in the manufacture and exports of minerals exported refined and processed barytes powder and sodium based bentonite to the tune of Rs. 5.3 million during 1971-72. The firm's export turnover during that year outstripped its export performance in 1970-71 which was at Rs. 3.15 million.

RAILWAY WAGONS TO BANGLADESH

India's exports of railway vehicles at Rs. 69.40 million in 1971-72 registered a sharp improvement over the export performance in the line at Rs. 28.17 million during 1970-71. During the first half of 1972-73 (April-September 1972), the export value amounted to over Rs. 10 million.

During 1971-72, railway tramway passenger cars (not mechanically propelled) constituted the major area of export dynamism having brought in Rs. 27.95 million. This single item alone fetched the maximum equivalent to the entire export earning of the full preceding year (Rs. 23.17 million in 1970-71). Hungary was the foremost buyer which absorbed 520 numbers valued at Rs. 14.38 million. Next to Hungary, Kenya was the second best destination which bought worth Rs. 3.00 million, followed by Ghana at Rs. 2.94 million, Sudan at Rs. 2.91 million and Poland at Rs. 1.42 million. Burma and Hong Kong were among other buyers.

Besides, parts of railway locos and rolling stocks earned Rs. 5.09 million. A large number of items such as rail axle brake gears, buffer rolling stocks, railway coach works and railway parts was primarily supplied to China Republic, Iran, Sudan, Hungary, France, Malaysia, New Zealand, Arab Republic of Egypt and United Kingdom.

Recently, a sizeable contract for the supply of 500 broad gauge CR type wagons to Bangladesh was secured by M/s. Texmaco, Calcutta. The Bangladesh Railway Board offered its acceptance for the Calcutta firm's tender. The other details of the contract are to be worked out soon. The Calcutta firm has already executed orders received from the East African Railways and the Hungarian State Railways.

India's capability in the manufacture of railway wagons is well recognised all over the world. India-manufactured wagons, because of their special characteristics of competitive prices and quality at par with the best ones produced abroad created a wide spread demand in the overseas markets. Some export contracts have already been bagged by the Indian firm earlier. The State Trading Corporation (STC) bagged a big contract from Yugoslavia in 1970 for the supply of 3600 wagons. Of these, 50 wagon sets of sub-assemblies have been shipped recently.

India is assisting a number of countries in building railway systems, particularly in African and Asian regions. The country supplieda bout 47 bogies and spares to Thai Railways recently. Similar export contracts have been secured earlier from East Africa, Hungary, Poland, Burma, Sri Lanka, South Korea, Sudan, Iraq and Iran. India's wagon building industry is well established and its installed capacity currently is of the order of 32320 numbers for four wheelers. In 1971, the actual production of the industry was around 7760 numbers. The production range includes hopper wagons, covered wagons and petrol wagons. Besides a sizeable number of railway equipment is also manufactured indigenously.

EXPORT PERFORMANCE AND POTENTIAL

SANTA CRUZ EXPORT PROCESSING ZONE

The Government of India have approved the layout plan for the Santa Cruz Export Processing Zone and construction work at the zone has already started. It is expected that production at the zone and exports from it will start from middle of 1974.

The export processing zone is to be the first establishment of its kind in India and will have certain unique features for encouraging the entrepreneurs to boost their exports. The production units within the zone will get developed plots or built-up sheds on rent; advance import licences for raw materials equal to yearly actual requirements and special facilities of blank foreign exchange permits for visits abroad. The objective is that the entire produce manufactured by the units in the zone would be exported.

Among the facilities that would be made available to the manufacturers in the zone will be that the products manufactured within the zone will not be subject to excise and other levies for import of capital goods and equipment and that the import of raw materials, components, spares and package materials will also be customs and excise duty-free.

Supply of all types of material from within the country to the zone will be treated as exports and as such the supplies will attract all facilities and incentives that are normally made available to the goods exported from the country.

INTERNATIONAL COFFEE AGREEMENT AND INDIA

The raw deal which the countries like India had in the fixation of quotas during the previous International Coffee Agreements is expected to be corrected if a new agreement is decided upon. The International Coffee Council which has met recently in London accepted a resolution to extend the 1968 Agreement by a further period of two years from October 1973 till September 1975. In doing so, all regulatory mechanisms provided for in the original agreement were deleted. The International Coffee Organisation is to meet again in September this year to take a final view on the future of the International Coffee Agreement. Meanwhile negotiations are expected to continue amongst the producer and consumer members of the Council, to evolve a fresh agreement which will necessarily be different in concept and content from the 1963 and 1968 Agreements.

The Indian Delegation at the recent sessions of the International Coffee Council has forcefully put forward its conditions for participation for evolving a new agreement.

India is to continue to export to the quota and non-quota countries on the existing pattern till September 1973. Her coffee exports during 1972-73 reached an all time high, both in terms of quantity and value. The country exported 47,715 tonnes of coffee valued at Rs. 314 million during the period compared to 350,695 tonnes valued at Rs. 220.70 million in 1971-72 thus registering a 34 per cent increase in terms of quantity and 42 per cent in value.

INDO-NEPALESE ECONOMIC COOPERATION

Pursuant to the discussions held between the Indian delegation led by Mr. D. P. Dhar, Minister of Planning and the representatives of His Majesty's Government of Nepal, a Joint Statement was recently issued on Indo-Nepalese Economic Cooperation. The two sides had wide-ranging discussions on economic, technical and scientific cooperation between the two countries in the fields of planning, agriculture, industries, power and transport. The Joint Statement indicated that a number of concrete steps in these areas will be undertaken by both the Governments.

The Government of India is to purchase Karnali power that might be surplus to the needs of Nepal. Since India will be the purchaser of bulk of this power, it will be fully associated with the formulation of this project. It is agreed by both the sides that they would cooperate in the accelerated development of Nepalese design and construction capabilities for the utilisation of water and power resources of that country. The Government of India is to assist His Majesty's Government of Nepal in this context and would be prepared to offer facilities for training Nepalese engineers in India.

The Government of India is also to undertake the survey and construction of the Kathmandu (Dolalghat)-Dhankuta road. The survey and detailed project report will be completed by the end of 1975 and construction work is to start soon thereafter.

Both the Governments have agreed to cooperate in a wide range of agricultural research and development activities designed for the improvement of cash crops and food crops. The Indian Government is to provide assistance to Nepal in the consolidation of their present efforts in horticulture development.

The Government of India is also to undertake a comprehensive study of the development of cement industry in Nepal. Both the Governments have agreed to exchange ideas, experiences and information pertaining to development of planning and project formulation. The Indian Government is also to make available such technical advice as may be desired by Nepal in the field of management of public enterprises.

INDO-EAST EUROPEAN JOINT COMMISSIONS

Three joint-commissions have been set up by India with East-European countries, namely, Czechoslovakia, Poland and Soviet Union. One more with Hungary is under active consideration. There is also a possibility that negotiations will soon begin with Bulgaria and Rumania for such commissions. The objective of setting up these commissions is to have a high level policy and recommendation-making body to observe the working of all aspects of cooperation in the economic, scientific and technical spheres including planning as also to review the working of the existing agreements between the countries. With East European Nations, the emphasis will mainly be on industrial collaboration, review of the performance of projects, assesement of trade under the Trade Plans, its diversification and enhancement; joint marketing and joint ventures in third countries as also technology transfer, shipping, production cooperation and international division of labour.

Although it is too early to make an in-depth evaluation of the working of the joint commissions, experience gained so far is useful, for, the existence of the joint commissions indeed generates a certain degree of desirable momentum in bilateral economic relations and brings the experts of two countries together in a regular and purposeful manner. The joint commissions being led at political level, provide for quick recommendations to be submitted to the Governments concerned. India expects that the role of the joint commissions with East European countries will play an important part in future bilaterally economic and technical relations and will provide a focal point for regular discussions, review and improvement in the relations.

The Indo-Czech Joint committee for Economic, Trade and Technical Cooperation which was set up in 1966 has already met thrice : June, 1969, August 1970 and December, 1971. The recommendations made by the joint commission are reviewed by both the Governments and implementation of the approved recommendtions is to be supervised by Working Groups.

The Indo-Polish Joint Commission for Economic, Trade, Scientific and Technical Cooperation was, established in January 1972. The first meeting of the Joint Commission is expected to take place in June 1973.

Indo-Soviet Joint Commission for Economic, Scientific and Technical cooperation was established in September 1972. The first meeting of the Joint Commission took place in February 1973. The meetings of the Commission are to take place alternatively in Moscow and New Delhi every year.

The Indian Goverament has accepted the Hungarian Government's suggestion to have a Joint Commission. The letters of agreement establishing the joint commission are expected to be exchanged soon.

UTTAR PRADESH CONTRIBUTES TO EXPORT TRADE

The export performance of the State of Uttar Pradesh in India was of the order of Rs. 451 million during 1971-72. The State's handicrafts account for 60 per cent of the export business of India in respect of such goods. The cottage industries in the State are also receiving close attention for development on cooperative basis and are poised to carve out increasing share in export trade of the country.

The State is a growing complex of industrial development, both in terms of investment and employment position, as also product-diversification and export performance. Among the central projects already active in the State are the Antibiotics Factory, Rishikesh; Heavy Electricals, Hardwar; Diesel Locomotive Works, Varanasi; Fertilizer Factory at Gorakhpur; Coal field at Singureli (Mirzapur); Frozen Meat Plant, Tundra and Heavy Structurals, Naini (Allahabad). Under establishment are the other public sector undertakings, such as, Bharat Pumps and Compressors, Naini (Allahabad), Hindustan Aeronautics Limited, Lucknow; Alloy Steel Plant, Kanpur; Bharat Electronics Limited, Ghaziabad; Oil Refinery at Mathura and a Scooter Project at Lucknow.

The small scale sector in the State has been receiving consistent encouragement. By 1972-73, the number of small scale units registered rose to 31,390 as against only 3,110 units in 1961. The U.P. Small Scale Industries Corporation, Kanpur, has a programme to set up 16 turnkey projects in the backward districts of the State including a project relating to absorbent cotton unit at Fatehpur, pottery unit at Basti, PCC Poles Unit at Azamgarh and building hardware unit at Ballia.

Besides the public sector projects and small scale units, a large number of private sector projects have been active in diversifying the production range of the State. The manufacturing range in the private units included items like ammonium sulphate, ammonium nitrate, maize and soyabean flour, varnishes, terminal blocks and relays, resin bonded paper, cotton tape, non-ferrous extrusion, carbon brushes, forging and casting, grinding wheels and abrasive material, asbestos packing, pipe fitting, sheet metal jobs, electrical, plastic and wooden items and so on.

During the last 22 years over 425 licences covering fixed capital components to the tune of Rs. 48,000 million have been implemented in Uttar Pradesh. These licences for new units and expansion of the existing units cover several new industrial items including textile machinery parts, synthetic rubber, caustic soda, fertilizer, rayon, steel casting, transformers and TV sets. Besides, over 100 industrial licences with an investment of nearly Rs. 1200 million are reported to be under implementation and these will be, when commissioned, able to contribute in a big way to the total production and export performance of the State's industrial sector.

INDIA'S TRADING RELATIONS WITH ECAFE

India's exports to the South East Asian countries (ECAFE countries) have been gradually improving year after year. From the average annual figure of Rs. 1348.3 million during India's Second Five-Year Plan, the exports increased to Rs. 1634.30 million during the Third Five-Year Plan. During 1971-72 the exports reached Rs. 3851.0 million. Important countries in the region to which Indian exports are sizeable include Japan, Nepal, Sri Lanka, Australia, Iran and Singapore. Of these the largest share was acounted for by Japan (nearly 50 per cent). In 1971-72, first ten countries of the region to which substantial exports from India have been effected were Japan (Rs. 1823 million), Australia (Rs. 280 million), Nepal (Rs. 284 million), Sri Lanka (Rs. 212.4 million), Iran (Rs. 198 million), Singapore (Rs. 176 million), Hong Kong (Rs. 158 million), Malaysia (Rs. 117 million), Burma (Rs. 108 million) and New Zealand (Rs. 103 million). Some of the major commodities supplied to the region are jute goods, tea, iron ore, leather, hides and skins (tanned or dressed), iron and steel including ferro alloys and ferro manganese and cotton piecegoods, cotton yarn and thread. The share of non-traditional items has been going up in India's export trade to the region, particularly in respect of industrial machinery, electrical machinery, apparatus and appliances, transport equipment, chemicals and allied products and petroleum products.

Indian imports from the South East Asian region were of the order of Rs. 3391.5 million during 1966-67. They increased to Rs. 3585.80 million in 1971-72. Principal commodities imported by India from the region include rice, wheat, machinery and industrial raw materials.

On the import side, the first ten major countries which imported from India were: Japan (Rs. 1616 million), Iran (Rs. 1264 million), Australia (Rs. 294 million), Nepal (Rs. 103 million), Burma (Rs. 53 million), Afghanistan (Rs. 48 million), Malaysia (Rs. 38 million), Thailand (Rs. 38 million), New Zealand (Rs. 36 million) and Singapore (Rs. 30 million).

India has concluded Trade Agreements or Trade Arrangements with Japan, Republic of Korea, Philippines, Afghanistan, Sri Lanka, Iran, Burma and Nepal. Joint Economic Committees/Commissions have been set up with Sri Lanka, Iran and Afghanistan to improve mutual economic relations.

The pattern of India's trade with the South East Asian region has undergone considerable transformation in the last few years. There has been an encouraging increase in the percentage of manufactured goods exported to these countries from India. Aside from direct exchange of goods and services, the instrument of joint industrial collaboration has come to stay as a significant medium of economic partnership. Most of the South East Asian countries invited foreign participation in the industrial programmes of their economies. In fact, they have declared a wide spectrum of facilities and sources to foreign investors. In this context, the scope for India's entering into joint ventures with co-developing countries of the region has a meaningful significance. There are quite a few areas in which the Indian entrepreneur can share his experience and expertise with foreign couterparts. Good progress has already been made by the Indian industry in this direction. Of the many joint ventures that have either gone on stream or are shaping up the major recipients are from the South East Asian region. Countries like Malaysia and Sri Lanka have sought Indian assistance for several ventures covering a wide range of manufactures from glass bottles to steel mills.

A specific area in which the South East Asian countries can seek Indian help would be in their infrastructural development such as in railways and irrigation. Indian firms either singly or in the form of consortia have already secured sizeable contracts from the region in this context. The Indian industry is in a position to offer technical assistance by way of training in her industrial establishments, as an adjunct to her efforts to export capital goods and equipment as also know-how.

Rising wages and labour shortage in the developed countries of the region like Japan and Australia has indeed brought out scope for supply from India of labour intensive products. There has also been a vast possibility of India's meeting the requirements of parts and components of these developed economies in the region. The Indian industry can also supply her products and services by way of sub-contracting.

The rising standard of living in the Asian countries and their endeavour for planned development offers scope for India's export both of traditional and non-traditonal items including new categories of consumer goods, machinery, machine tools and equipment which India is indeed capable of producing and exporting on competitive terms.

EXPORT POSITION OF OILS AND OIL CAKES

India's export trade in oil cakes totalled 741,000 tonnes valued at Rs. 404 million in the year 1971-72. In the first half of 1972-73, the export position brightened at 465,000 tonnes at a value of Rs. 270 million as compared to 388,000 tonnes at Rs. 208 million in the same period of 1971-72. Indian exports in the line are expected to show further improvement in view of the rising spurt in international prices of oil cakes.

Indian supplies in the past have been pre-dominantly in the direction of East Europe. In view of the U.S. - U.S.S.R. Soya Bean Deal concluded recently and the consequent shortage of proteins in the free currency markets, the pre-dominant position of East Europe in India's export direction is likely to witness a change and the exports are expected to swing in favour of the West European matkets in the near future.

The Indian Government have recently put a ceiling of 600,000 tonnes on the export of groundnut extractions for the year 1973. The position concerning the ceiling is to be reviewed in the third quarter of the current year when the crop prospects for subsequent year will be made available. Meanwhile every effort is being made by the Indian Government to encourage exports of other extractions, particularly, decorticated cotton seed and extractions from seeds of tree origin on which there are no ceiling constraints whatever.

Among the vegetable oils exported by India, castor oil occupies the prime place. The production of the oil is estimated around 40,000 tonnes per year. The domestic demand has been assessed around 20,000 tonnes of which 15,000 tonnes are consumed by the soap industry. A sizable surplus is thus available for exports. In 1971-72, castor oil exports totalled 18,000 tonnes at a value of Rs. 61.8 million; in 1970-71 the export was of the order of 15,635 tonnes at a value of Rs. 59 million. Castor oil exports were canalised through the State Trading Corporation of India since September, 1971. Since canalisation, the exports witnessed improvement, particularly to the East European Region. During the current year, international prices of castor oil shot up due to the failure of Brazilian crop. The State Trading Corporation of India have plans to increase the exports to the tune of 30,500 tonnes valued at Rs. 143.2 million during 1972-73.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PROGRESS IN INDUSTRIAL COLLABORATION ABROAD

With the broad-based industrialisation in the country and a growing interest in the economic progress abroad, particularly in the co-developing countries, Indian Government has been engaged in several activities for extending the areas of world economic cooperation. A number of joint-committees and commissions have been set up in recent years with different countries of the world, both developed and developing.

The Indo British Technological Group, was formed with the basic purpose of reviewing India's developing needs vis-a-vis possibilities of further British collaboration and investment in India. It is engaged in improving the export performance of British subsidiaries in India, the prospects of cooperation between the two countries through sub-contracting from Indian sources both for U. K. industries ana third countries and increasing research and development efforts by the British subsidiaries in India.

The Indo-Sri Lanka Joint Committee for Economic Cooperation has identified specific industries for cooperation between the two countries; feasibility studies in respect of these industries were prepared by the Indian Consultancy Organisations. The industries specified include Graphite based industries, Sheet Glass and Ophthalmic Glass to be based on silica sand available in Sri Lanka; refractories, rubber goods including tyres and tubes and mica industry.

The Tripartite Working Group of India, A. R. E. and Yugoslavia, set up to examine feasibility of industrial cooperation between these countries, identified certain industries of which four specific groups, namely, TV Glass bulbs; TV picture tubes; 50 HP wheeled tractors and scooters offer particularly good propsects.

A Committee on Industries of Indo-Iran Joint Commission for Economic, Trade and Technical Cooperation, has identified machine tool manufacture (Czech collaboration) and tractor manufacture (Rumanian collaboration) as two fields in which the units already in existence can explore the possibilities of bilateral cooperation. It also specified the manufacture of alarm time pieces with Czech collaboration and automobile panel instruments with West German collaboration as the two fields in which industrial units likely to be set up in future in India and Iran can explore prospects of establishing tripartite relations, in consultation with their common technical collaborators. India has recently undertaken two schemes of assistance in Afghanistan and Mauritius for setting up industrial estates in the two countries.

Indian entrepreneurs have been showing active interest in setting up industrial joint ventures abroad. The fields of joint ventures where bulk of the plant required by the developing countries can be supplied by India include the following : Sugar (upto 3000/4000 tonnes per day crushing capacity), Cement (upto 1000 tonnes per day capacity), Solvent extraction of oil cakes (upto 100 tonnes per day capacity), distilleries, Dairy plants (upto 150,000 litres per day capacity), Asbestos Cement Pressure Pipe and Sheet making (upto 36,000 tonnes per annum capacity), Light and medium structural fabrication, small and medium diesel engines, Motors and Transformers and L.V. and High Voltage Switchgears, Domestic Sewing Machines Rayon (staple fibre-upto 18 tonnes per day capacity), Plasticizers (DOP, ZEP) asotanilide-Batch type upto 10,000 tonnes per annum capacity, industrial alcohol from molasses (up to 400 gallons per day capacity), Azo-dyes, Rapid fast colour solubilized dyes, Sulphuric acid (50 tonnes per day capacity) and super-phosphate (10 tonnes per day capacity), Salt Cranes (only light and medium duty), and Railway wagons.

The manufacturing areas where India can render technical assistance include: Grey Iron castings, steel castings, steel forgings, aluminium, E.R.W. steel pipes and tubes, welding electrodes, railway wagons, steel wire ropes, E.O.T. cranes, steel structural fabrication, sugar machinery, cement machinery, industrial boilers conveyors, liquid petroleum gas cylinder, water treatment plant, solvent extraction plant, constructional machinery, insecticides equipment, tea processing machinery, rice mill machinery, weighing machines, leather and leather footwear, manufacture of paper and pulp, rubber goods, rubber hoses, footwear and belting, organic chemicals such as plasticizers, formaldehyde and acentanilide, industrial alcohol from molasses, paints, enamels and varnishes, leather cloth, refractories and fire bricks, general crockery and sanitaryware, electrical porcelain, synthetic detergents, printing inks, vegetable oil mills, dye stuffs, plastic goods, industrial gases (oxygen, nitrogen and acetylene), food processing industry, plywood, and chip board, soaps and toilet goods, glass bottles and glassware, biscuits, bread and confectionery and dairy products.

FACTS ON INDIAN STANDARDS INSTITUTION

The Indian Standards Institution, established in 1947, is mainly concerned with the preparation of standards for products, materials and processes. By the end of October 1972, it has announced about 7,000 standards, covering different industries such as agriculture, food products, consumer products, chemicals, civil engineering, electro-technical, marine engineeing, machanical engineering, textiles, structurals and metals. These standards aim at industrial development on a planned basis, promotion of international trade, maximum utilisation of indigenous raw materials and import substitution. By October, 1972, about 80 per cent of Indian standards were adopted by the various departments of Central and State Governments and the industry in public and private sectors.

Besides formulation of standards, ISI is responsible for introducing standardization and quality control in different sectors of economy, operation of ISI certification marks scheme, creation of standard-consciousness, and furtherance of standards in the country. Under the ISI Certification Marks Scheme, the total number of licences granted by the Institution was over 3200 (October 1972). Several new products are added under the scheme year after year. In the year ending October 1972, 62 new products were covered including agricultural tillage discs, country spirit, cast iron manhole covers, diesel engine, dye-intermediates, fountain pens, handloom cotton bandage cloth, letterpress ink, tufted wool carpets and typewriter ribbons.

The ISI takes active interest in the work of international standard organisations such as International Organisation for Standardization (IOS), International Electro-technical Commission (IEC), Commonwealth Standards Conference (CSC) and Asian Standards Advisory Committee (ASAC), with the objective of promoting international trade and furthering India's interests in international standardisation.

IMPORT POSITION OF STEEL

The total quantity and value of iron and steel imports during 1971-72 and 1970-71 respectively were 1.33 million tonnes at Rs. 2267 million and 0.68 million tonnes at Rs. 1372 million. In the first half of 1972-73 (April-September 1972) the quantum imported was 0.67 million tonnes and the value was Rs. 1088 million.

Of the above total imports of iron and steel (excluding stainless steel), the share of pig iron, sponge iron and iron and steel bars and ferro alloys was of the order of Rs. 29.8 million (8140 tonnes) in 1971-72. In the first half of 1972-73, the value was Rs. 5.93 million (1675 tonnes). The major sources of import in 1971-72 for this group were U.S.A. (Rs. 17.3 million or 4235 tonnes), Canada (Rs. 3.5 million), Japan (Rs. 2.95 million), and Korea Republic (Rs. 2.06 million). The share of steel ingots and other primary form of iron and steel was of the order of 117,760 tonnes valued at Rs. 127 million in 1971-72. The major suppliers were Japan (Rs. 5255 million), German Federal Republic (Rs. 23.69 million), U.K. Rs. 21.50 million and France Rs. 12.12 million. The import value of iron and steel bars, rods, angles, shapes in 1971-72 was Rs. 335 million (170325 tonnes). U.K. was the major source of import at Rs. 117 million, followed by Japan at Rs. 89.5 million and Federal Republic of Germany Rs. 37.5 million. The import bill of universal shapes of iron and steel during 1971-72 was Rs. 1335 million (872150 tonnes). The major sources of import were Japan (Rs. 338 million) and U.K. (Rs. 303 million). Iron and steel strips were imported to the tune of Rs. 168 million in 1971-72, the quantity being 100,950 tonnes. Iron and steel wire was imported to the level of Rs. 53.27 million while the import of tubes, pipes was Rs. 173 million in 1971-72.

For the canalised items of import in the iron and steel industry, imported materials are distributed to actual users on the basis of release orders issued to them by the licensing authorities. A preference is shown in respect of price charged from exporters as compared to those who require imported steel for domestic consumption. In the case of non-canalised categories, import licences are issued directly to actual users according to their entitlement.

PROGRESS OF INDIA'S STEEL BANK

India's Steel Bank which started functioning during 1972-73 has the responsibility of physically maintaining the requisite levels of stock of specified critical steel categories. The Bank meets the requirements of priority units off the shelf against valid import licences held by them. The main purpose of the Bank is to eliminate delays in the physical supply of certain matching sections of steel to important projects.

The Bank has, since its inception, placed orders for 4710 tonnes of boiler quality plates, 640 tonnes of stainless steel and carbon steel flanges, 74 tonnes of stainless steel tubes and 9500 tonnes of seamless pipes. Another 27,000 tonnes of critical item of steel required by the Bank have been identified and the question of their import is being considered.

Imported steel is to be supplied at the price prevailing at the time of submission of tenders in respect of projects financed under IDA (International Development Association) Credit. This is to be irrespective of any increase in the price during the currency of the contracts. This provision is to be applicable for supplies made on or after December 23, 1972. Earlier, the Chief Controller of Imports and Exports issued a Public Notice in terms of which imported steel was made available for execution of orders received from projects financed under IDA Credit. The steel was made available at JPC price (Joint Plan Committee) or the ruling HSL price plus 2 per cent thereof, less the quantum of excise duty leviable.

ASIAN DEVELOPMENT FUND

The Asian Development Bank's (ADB) new Fund for soft lending, Asian Development Fund, is expected to become operative in September this year. The Fund will have contributions of developed countries at $ 525 million for three years ending 1975.

India is the third largest subscriber country to ADB's capital resources and has welcomed setting up of the fund for concessional lending to developing countries of the Asian region, particularly smaller countries like Nepal, Sri Lanka, and Fiji Islands.

India does not draw any loan from the Bank as she desires that other developing countries should get maximum benefit from its operations. India has increased her contribution of technical assistance fund to Rs. 800,000 in the current year, which is double the amount of 1972's contribution.

PROGRESS OF ATOMIC ENERGY PRODUCTION

During 1972-73, about 6078 million units of electric energy was produced by the Tarapore atomic power station.

The first unit of Rajasthan Power Project, which has a capacity of 200 MW, attained criticality in August 1972 and was synchronised to grid on November 30, 1972. It has since been producing power intermittently. Apart from the production of electricity, the Atomic energy found extensive peaceful applications in the fields of agriculture, biology, medicine and industry.

India has power projects collaboration agreements with U.S.A. and Canada and bilateral agreements for collaboration in the field of peaceful uses of atomic energy with many countries which include some developed countries. These are Afghanistan, Belgium, Brazil Czechoslovakia, Arab Republic of Egypt, France, West Germany, Hungary, Philippines, Rumania, Spain and U.S.S.R.

According to a statement made by India's Prime Minister recently, no collaboration proposals to secure technical cooperation from other advanced countries for production and utilisation of atomic energy were envisaged in the near future.

ANOTHER RESEARCH REACTOR IN TROMBAY

The Department of Atomic Energy in the Government of India are planning to build another research reactor in Trombay—a 100 megawatt thermal reactor using natural uranium as fuel.

According to the Atomic Energy Department's Annual Report for the year 1972-73, the proposed reactor will be the biggest research reactor in India and will use heavy water, both as coolant and moderator. Other existing research reactors in the country are 'Apsara' (one megawatt reactor), 'Zerlina' and 'Purnima' (both zero power reactors) and a 40 megawatt reactor 'Cirus', all in Trombay.

Intended for scientific research and large scale production of radio isotopes, the proposed reactor is designed to generate three hundred trillion neutrons per second per square centimetre—a high flux that would enable the reactor to produce much more plutonium than the present production at 'Cirus'. In order to process and separate this additional pluntonium, the fuel reprocessing plant is being expanded.

NUCLEAR OPERATIONS AND RADIATION PROTECTION

India's nuclear operations have the credit of maintaining one of the best radiation safety records in the world. The Health Physics Division of Bhabha Atomic Research Centre (BARC) is vitally engaged in basic and applied research connected with Health and Safety.

A variety of special instruments has been designed and fabricated by the Health Physics Division of BARC, thus reducing the country's dependence on imported in instruments. Among the various instruments designed and developed, the infra red analyser with low level of carbon monoxide and other pollutant gases is worthy of special mention. Such an instrument has been produced for the first time in the country and has a considerable scope for reducing air pollution, as well as monitoring and process control in chemical industry.

The Solid State Dosimetry Group of the Directorate of Radiation Protection is engaged in the development of solid state dosimetric systems for use in hospital physics problems in routine and accident dosimetry and personnel monitoring. The Directorate is also responsible for rendering advice in safe uses of radiation sources and in the planning of radiation installations and radio isotope laboratories in various fields such as medicine, industry, agriculture and research.

The Directorate of Radiation Protection which is entrusted with the responsibility for countrywide radiation hazards control programme has expanded its activities. In 1972, the Directorate covered 28,000 workers and 1775 institutions. The ultimate aim is to cover all radiation workers in the country.

As a part of the safety programme, 63 institutions were provided with detailed advice on the planning of x-ray and teletherapy installations and radio isotope laboratories.

CEREAL PRODUCTION DOUBLED THROUGH PLANS

As a result of the planned efforts during the last twenty years, India's production of cereals has been doubled. Production of rice went up to 42.7 million tonnes, wheat to 26.5 million tonnes and other cereals to 24.4 million tonnes giving a total outturn of 93.6 million tonnes of all cereals during 1971-72. The production levels of these in 1949-50 (pre-plan year) were 23.5 million tonnes of rice, 6.4 million tonnes of wheat and 16.9 tonnes of other cereals giving a total of 46.8 million tonnes.

About 20 per cent of the total plan outlay in the various five-year-plans was allocated to agriculture and irrigation. The temporary present shortage of foodgrains cannot, therefore, be considered attributable to inadequate priority given to these sectors, stated the Minister of Planning, Mr. Mohan Dharia.

The Government of India have been drawing up plans of agricultural production and irrigation to step up production of foodgrains including pulses to 10 million tonnes at the end of the Fifth Five-Year Plan. These included among others effective exploitation of the irrigation potential already created as a result of various plan schemes.

POSITION OF EXTERNAL ASSISTANCE

An amount of Rs. 30,000 million has been assumed in India's Fifth-Five Year Plan by way of gross external assistance.

The debt-service obligation comprising interest payments and loan repayments over the plan period would amount to Rs. 23,000 million and Rs. 600 million. This would therefore have the net aid of Rs. 6,400 million to be availed of in the early years of the Plan. In the terminal year the net aid would be brought down to zero. The external assistance is to be obtained from all friendly countries.

RUPEE APPRECIATES AGAINST DOLLAR

While the Indian rupee had depreciated in value vis-a-vis Japanese Yen, or West Germany's Mark, it remained stable in relation to British Pound and appreciated against the U. S. Dollar, according to India's Finance Minister, Mr. Y. B. Chavan. The Rupee had not been devalued nor had there been any real depreciation of value. Because currencies like Yen and Mark had gradually appreciated, there was bound to be some corresponding depreciation in the Rupee. This was not the result of any action by India.

India has not suffered in trade as a result of the continuance of Rupee-Sterling relationship. Maintenance of Central rate in terms of sterling did not in any way imply that Rupee was tied down to any specific exchange rate relationship with British Pound.

TELEVISION DEFLECTION COMPONENTS DEVELOPED

The Central Electronics Engineering Research Institute, Pilani (Rajasthan), has succeeded in developing television scanning components such as EHT transformers, deflection coils, linearity coil and valve bases. The deflection components, which are being imported currently, constitute a vital segment in the components list, after the picture tube, for a TV receiver. These components require sufficient precision in design and development.

For the deflection coil developed by the Research Institute, the specifications are : inductance per line coil (3.65 mh), resistance per line coil (4.00 ohms), deflection current at 18 kv for deviation of 495 mm (2.1 A p-p), induction for verticle (86 mh), resistance per verticle (ohm), and deflection current for 390 mm deviation at 18 KV (0.42 A p-p). For EHT Transformer, the given parameters are : boost load (1 mA) and drive voltage (125 V p-p). For the transformer, the beam current specifications for 100 uA and 200 uA respectively are : 655 V and 635 V for boost voltage; 215 V for supply voltage; 17 KV and 15 KV for EHT voltage respectively and 5 per cent and 6 per cent for over scan. The specifications for linearity coil are : series resistance 1 ohm, inductance without ring magnets 0.2 mH and inductance with ring magnets 0.22 mH. The insulation breakdown for EHT valve base is 30 kv.

The deflection coil winding machine developed by the Pilani Institute is comparable to imported machines and can result in considerable saving in its import. The coil is responsible for deflecting the scanning spot horizontally and vertically in synchronism with the transmitted signal. The EHT transformer is an imporrant part in the line output deflection circuit of a Television receiver which is responsible for providing deflecting current and generates extra high tension up to 18 KV. The linearity coil is a special component introduced between the deflection coil and EHT transformer to provide correction in the deflection current to give required adjustment for providing a linear raster on the picture tube. The EHT valve base is to withstand EHT of 18 to 20 KV and provides the mounting arrangement for EHT rectifier.

Most of the raw materials needed for the manufacture of these components are available indigenously except a few like yoke ring ferrite, raster correcting magnets, thermister and self bonding wire. The total cost of imported raw materials for each set will be only Rs. nine. The total capital outlay to manufacture these components will be Rs. 230,000 out of which Rs. 82,000 will be required from indigenous supply.

UTILISATION OF WASTE MATERIAL

A project to profitably utilise paddy straw for making ropes, mats and bags has been recently started in Punjab. This practice is stated to be common in Japan. The paddy straw rope, though less strong than others, is comparatively inexpensive but it utilises agricultural waste that is available in abundance in India. A similar study to utilise crop waste such as wheat straw and paddy husk as fuel material has also been undertaken in Punjab at the Agricultural University in Ludhiana. If successful, the study will save millions of tonnes of cattle dung which is valuable as a crude fertilizer but is now being used as fuel in rural areas.

A factory to manufacture building components from waste materials will also be set up in Delhi. It will use fly-ash obtained from the thermal power station in the city. With a view to meeting the challenge of housing, the Government of India are taking necessary steps to popularise inexpensive materials and new techniques that would reduce construction costs.

COOKING GAS FROM COCHIN REFINERY

The Liquified Petroleum Gas (LPG) plant of the Cochin Refineries Ltd., is expected to soon go on stream. The plant which is designed to produce initially 2,000 tonnes of LPG Cooking Gas annually has a buit-in flexibility to produce 9,000 to 10,000 tonnes to meet the estimated demand in the Cochin supply area comprising Kerala and parts of Tamil Nadu. The initial production will be able to meet the total current demand of cooking gas for the entire State of Kerala.

The Cochin LPG plant was designed and constructed by the Engineers India Ltd., a Government of India undertaking, who were engaged as prime contractors for the expansion of the Refinery.

EXPORT EARNINGS OF PUBLIC SECTOR CORPORATIONS

The public sector corporations functioning under the control of India's Ministry of Commerce have been making vital contribution to promote and diversify the country's export trade.

The State Trading Corporation constitutes an important example of such corporations. Today, it handles more than 300 items on the import and export fronts and its volume of trade increased from Rs. 1671.8 million in 1968-69 to Rs. 2666.0 in 1971-72. For the year 1972-73, the STC has fixed a trade target of Rs. 2856.2 million, of which the value of exports is estimated to be of the order of Rs. 920 million. During the period January-October 1972, STC's actual export value amounted to Rs 806.5 million.

The Corporation has consistently endeavoured to increase its export activities in terms of items handled by it as also entered new markets particularly in non-traditional products. It has entered into special arrangements with major trading houses in various parts of the world for diversifying export performance. It has set up a foreign venture under the title of 'STC Far East' jointly with some leading trading houses in Hong Kong and is examining the possibilities of establishing similar joint ventures in West Asia and Europe. It has also established a series of foreign offices which now number 21 with well-knit organisations to function as an effective instrument in her dynamic export effort.

In the consumer goods sector, STC's exports fetched Rs. 278.6 million during January-October 1972 and include art-silk, rayon tyre cord, woollen knitwear, textiles, and a host of new items like vacuum flasks, dry batteries, aluminium foils, cigarettes and cigars and spectacle frames. For the first time, the Corporation received export orders recently for Rs. 0.4 million worth of loudspeakers from African countries, Rs. 120,000, worth of plastic articles from Australia, and Rs. 0.5 million worth of tooth pastes from Bangladesh. A number of new items in the chemicals and pharmaceuticals sector has also been introduced by the Corporation recently and so far these exports fetched Rs. 10 million. Among the new markets covered by them for these products are Sudan, Kenya, Australia, Sri Lanka, Bangladesh, and Singapore. The Corporation achieved a break through in the Kenyan market by securing orders for calcium hydroxide, potassium chloride and potassium iodine. A beginning has also been made by them in the Mauritius market for chemicals and pharmaceuticals. In their effort to introduce new items in the export stream, the Corporation recently succeeded in finalising export deals for processed and de-hydrated fruits, construction materials and hospital equipment.

For the first time, export orders for petrol jerikans, web equipment and canned fruit products were secured by the Corporation from Australia. They have also taken steps to promote exports of fresh roses.

Among the industrial products, STC succeeded in obtaining Rs. 27.4 million worth of export orders during January-October, 1972 and Bangladesh has emerged as the biggest buyer of cement.

Leather-wear exports amounted to Rs. 76.8 million in the period mentioned above and new makets that have been explored include Australia, where an effort is being made to supply Kolhapuri chappals.

Export orders worth Rs. 383 million were also achieved by the Corporation during the period under review for other products such as lemongrass oil, dried fish, kuthroots, jute, spices, coffee and groundnut extractions. A trial order was received, for the first time, for supplies to Japan and after several years castor oil exports to general currency areas have also been resumed, though this has been mainly due to the failure of the Brazilian crops.

The Projects and Equipment Corporation (PEC), a subsidiary of the STC, has taken over the business of the former Engineering and Railway Equipment Division of the STC. PEC's main objective is to develop and boost the export of non-traditional items like engineering, industrial plants and machinery, railway rolling stock and equipment as also to penetrate and develop new markets for these items. An important aspect of PEC's export objective is to make a breakthrough in undertaking complete turnkey projects in the industrial and railway fields abroad. During January-October, 1972, PEC's exports amounted to Rs. 118.4 million and a wide variety of engineering and railway equipment was exported including wagons to Hungary, Poland, East Africa, Sudan and Burma, couplers to Iran, garage equipment to U.S.S.R., tyres and tubes, automobile parts, marine diesel engines, and pumpsets, textile machinery, teleprinters, electric motors, agricultural implements, twist drills, hand tools, bicycle and parts, steel wire ropes, soil pipe and pipe fittings, surface grinders and steel tubes to various countries. The direction of exports organised by PEC is practically all over the world including West Europe, U.S.S.R., U.S.A., Zambia, East Africa, Iran, Hungary, Poland, Yugoslavia and Bangladesh. The Corporation secured orders for export of coaches to Zambia, garage equipment to U.S.S.R. and bicycles to U.S.A. during the period mentioned above. Their exports of garage equipment and bicycles is considered to be a major breakthrough in the new markets.

As on November 1, 1972, PEC had export orders on hand worth Rs. 578 million. The building up of a steel foundry in Sri Lanka is on PEC's hand. Negotiations are in progress for setting up textile mills in Sudan and Turkey, railway signalling system in Syria and survey and construction of railway lines in Iraq. Preliminary discussions have also been held with Guinea for setting up of railway line to exploit their mineral resources.

Another subsidiary of STC, the Handicrafts and Handlooms Export Corporation (HHEC) fetched export earnings worth Rs. 38.34 million in the first three quarters of 1972 (January-September, 1972) as against Rs. 23 million in the same period of 1971. The Corporation had entered into collaboration agreement with M/s. Peter Golding Clothing Co. of London for bulk export of men's wear manufactured in India. They have also achieved substantial exports to U.S.A. of this item, earning about Rs. 1.04 million. The Corporation hopes to achieve a target of Rs. 4.5 million during 1972-73 for this item alone.

HHEC has also rendered assistance to the Indian Carpet Consortium by booking wholesale orders on their behalf and stocking their goods for sale to German buyers in their warehouses in Hamburg. The total exports of carpets to West Germany went up from Rs. 16.7 million in 1970 to Rs. 37.5 million in 1971 and are expected to reach a figure of Rs. 50 million in the following year. The Corporation has also been successfully introducing new designs in carpet making and reproducing some of the Persian carpets in India.

The Minerals and Metals Trading Corporation of India which had a trade turnover of Rs. 2680 million in 1971-70 and expects to fulfil an export target of Rs. 3500 million in 1972-73 is the canalising agency for the export of iron ore, manganese ore, ferro-manganese, coal and mica. The export turnover of the Corporation was of the order of Rs. 870 million during 1971-72. Despite the continuing uncertainty in the international market and infra-structural difficulties at home, MMTC is hopeful of achieving export target of Rs. 1200 million during 1972-73.

As a result of MMTC's efforts, a foothold was secured in the newly emerging iron ore markets of Taiwan and South Korea. A long term agreement for the supply of 1.66 million tonnes of iron ore to Taiwan during the five years ending January 1978 has been recently finalised. A contract for the supply of 1.14 million tonnes to South Korea during the period of five years, 1973-77, was also concluded by the Corporation. Despite limitations on demand and supply sides MMTC earnd Rs. 720 million through its iron ore exports in 1971-72.

In respect of manganese ore, the export value during 1971-72 was of the order of Rs. 110 million. In an effort to improve the level of exports for the ore, the Corporation introduced Ferurginous Grade manganese ore low in manganese content) in the markets of Czechoslovakia and South Korea and also high grade manganese ore (with high Phos) in the East European market.

The Corporation has been able to finalise sales of about 65,500 tonnes of ferro-manganese and ferro-manganese fines valued at Rs. 56.8 million, pursuant to the improvement in world demand after March, 1972. Additionally, there was a backlog of sales concluded in 1971-72 amounting to 50,400 tonnes of ferro-manganese,

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making a total sales of about 115,900 tonnes. In addition, contracts were finalised by the Corporation for sale of 33,000 tonnes of ferro-manganese slag, valued at Rs. 3.8 million during 1972-73. Against the above sale commitments, 49,355 tonnes of ferro-manganese valued at Rs. 43.8 million and 7650 tonnes of slag valued at Rs. 0.9 million were already shipped by the Corporation. The Government of India had earlier placed a ceiling of 60,000 tonnes on export of ferro-manganese and its slag in order to conserve high grade manganese ore used in the production of ferro-manganese for meeting the growing indigenous requirements. This ceiling has been since relaxed. And it is expected that a substantial quantity of its total sales commitments will be soon shipped.

The export value of coal by the Corporation stood at Rs. 20 million in 1971-72 as against Rs. 40 million in the preceding year. This was due to the reduced offtake by traditional markets, namely, Sri Lanka and Burma which have dieselised their railways. With the liberation of Bangladesh, the exports are now expected to look up. The Corporation initially supplied 50,000 tonnes of coal to Bangladesh under Aid Programme. The Trade Plan concluded between the two countries provided for export of coal worth Rs. 40 million by MMTC, over the year, ending March 1973. As a result, MMTC entered into a contract for supply of 460,000 tonnes of coal, valued at Rs. 35 million. It is expected that the Corporation would be able to raise the level of exports during 1972-73 to about Rs. 40 million.

Mica exports were canalised through MMTC since April, 1972. During 1972-73 the Corporation's exports of mica are expected to be of the order of Rs. 120 million, besides which, exports of the order of Rs. 30 million were effected by the erstwhile exporters during April-June, 1972 against contract concluded earlier. MMTC is also engaged in export of sillimanite whose canalisation came into effect from April 1972.

The Indian Motion Pictures Export Corporation Limited (IMPEC), another subsidiary of STC, succeeded in increasing its share in the country's total exports of motion pictures by 11 per cent in 1971-72 compared to 8 per cent in the preceding year. IMPEC's exports o films were of the order of Rs. 5.3 million in 1971-72. A significant breakthrough in non-traditional markets was negotiated by the Corporation for the sale of 52 Indian films for the territories of Peru, Ecuador and Bolivia for a total value of about Rs. 3.5 million. Exports under the Five-Year agreement with M/ Sovexportfilm continued to increase and it is expected that a minimum of Rs. 1.0 million worth of films will be exported to them during 1972-73. The Government have canalised country's imports and exports of feature films through STC, effective from August and November 1972 respectively. In view of this, the Government are considering the establishment of a new company (Film Trading Corporation) for handling the external trade of feature films.

The National Textile Corporation Limited, which is an organisation set up primarily for looking after sick and closed textile mills, has achieved some success in the field of exports. Some of the 57 mills taken over by the Corporation exported cloth and yarn valued at about Rs. 42 million during the period April-November, 1972.

The Jute Corporation of India Limited, which is to look after the import, export and internal marketing of jute was allotted an export quota of 100,000 bales of raw jute for export to free currency areas (1972-73) out of which the Corporation exported 96,000 bales valued at Rs. 45.5 million to the U.K., West Germany, Belgium, Poland, Spain, Japan, Australia, U.S.A. and Africa.

The Cashew Corporation of India Limited, a subsidiary of the STC, is among others, organising export sales of cashew kernels. As against its exports of Rs. 2.1 million in 1971-72, the Corporation effected overseas sales of Rs. 32.3 million during January-October, 1972. They are presently examining how to augment domestic supplies to the processing industry in view of the dwindliug imports from East Africa.

Such has been the contribution of the various Public Sector Corporations to the country's export growth. ☐

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EXPORT OF IRRIGATION AND POWER CONSULTANCY SERVICES

Power generating capacity in India witnessed an ight-fold increase in the last two decades–2.3 million KW in 1951 and 18 million KW now. The per apita consumption of electricity has increased five imes–from 18 KWH to over 93 KWH. The total umber of villages electrified up to 1972 was 131,000 and the number of pumpsets energised was 2.07 million. With such progress having been achieved, the Indian economy is today capable of supplying abroad water and power development consultancy services.

A public sector undertaking, M/s. Water and Power Development Consultancy Services (India) Limited (WAPCOS) is mainly concerned with the job of providing engineering and related technical consultancy services for development of irrigation and power resources. Within a shortspan of its existence (four years), the Organisation has already earned considerable reputation in exporting consultancy on competitive terms particularly to the South East Asian and African Regions. The company is registered with various international financing agencies such as the Asian Development Bank, the United Nations Development Programme and certain national agencies in developing countires. It has explored the possibility of obtaining consultancy jobs in a number of countries including Afghanistan, Indonesia, Fiji, South Korea and Sri Lanka.

WAPCOS has recently entered into an agreement with the River Valley Department of Sri Lanka for providing consultancy services for the Uda Walawe Project. The firm has also signed an agreement with the Electricity Authority of Afghanistan for preparation of designs and project estimates for the Bamiyan Phule Kumri Power Stations and feasibility studies for nearly fifteen other micro-hydel schemes. Another agreement was entered into by the firm with the Royal Government of Afghanistan rendering consultancy services for the Khanabad Irrigation Project which is being financed by the World Bank. The consultancy agreement provides for a fee of nearly Rs. 3 million.

The organisation has also been entrusted with the feasibility studies for the Bank Mak Nao Lift Irrigation Project in Laos. At the request of the Zambia Electricity Supply Corporation, it assisted them in the selection of 20 power and one civil engieeering experts.

M/s. WAPCO earned Rs. 723,000 by way of fees for consultancy services during the year 1971-72.

EXPORT SUCCESS OF SMALL SCALE FIRMS

In the context of export promotion, the small scale industrial units in India have come to play an important role in recent years. They have succeeded in not only earning sizeable sums of foreign exchange but in introducing new lines of export and exploring new markets. The Trade Development Authority, 16 Parliament Street (P. B. No. 767), New Delhi is actively engaged in rendering assistance to small units in their export endeavour. Among the small scale firms that have recently succeeded in securing export contracts for non-traditional products with the assistance of TDA, three parties deserve special mention.

Messrs Victor Tools Corporation, Jullundur (Punjab), is an established manufacturer of handtools, especially machine vices, pipe vices, bench vices, cutting pliers and adjustble wrenches. Enthused by their initial successes in export trade to nearby markets in West Asia and South East Asia the firm sought to achieve a breakthrough in the Western markets. They have recently obtained a trial order from a Canadian buyer and are presently negotiating with importers in U.S.A. and West Germany. The firm has improved upon its annual export performance from Rs. 0.42 million in 1969-70 to Rs. 0.7 million in 1971-72 and presently has export orders of the value of over Rs. 1 million for execution.

Messrs Sadem Industries, Ludhiana, another small scale unit, manufacturing bicycle parts, has succeeded in introducing its wares in the U. S. and Canadian markets. They are also supplying bicycle components to Iran, Lebanon, Libya, Syria, Indonesia and Malaysia. The firm's exports during 1972-73 were estimated at Rs. 0.6 million. Currently, the party is negotiating with an important buyer from France for the supply of a range of bicycle components. Their recent participation in an exhibition in France, FOIRE DE PARIS, has raised curiosity among French buyers.

Messrs Jainco Dresses, 8 Kailash Nagar, Delhi-31, is yet another small scale unit that has succeeded in introducing its products, mainly shirts and table cl
in world markets. It has a capacity to produce 2,0
industrial shirts and 500 regular shirts per day. T
firm recently air-freighted their first consignment
silk shirts to Spain. It was also successful in securi
orders for over 2,000 silk shirts and nearly 10,000 sma
table covers of the value of Rs. 100,000 to an Itali
buyer. The company is currently negotiating a
export order for the supply of 20,000 industrial shirts
U.S.A.

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CABLES AND WIRES ON EXPORT STREAM

With 90 units in the organized sector and about 400 units in the small scale sector, the export performance of the cables and wires industry in India has been improving from year to year. The export value of the industry which was merely of the order of Rs. 16.77 million in 1967-68 increased to about Rs. 103.70 million in 1971-72.

Among the varieties exported by the industry, insulated wires and cables alone fetched Rs. 50.76 million, accounting for nearly 50 per cent of the entire export value of wires and cables in 1971-72. Bare copper conductors was the second best variety from export point of view, earning Rs. 33.66 million during the year. Aluminium conductors, another variety active in the line, netted Rs. 18.88 million. U.S.S.R. topped the list of the buying countries for insulated wires cables and aluminium conductors. Singapore, Kuwait, Malaysia, Iran, Sudan, Qatar, Arab Republic of Egypt and German Democratic Republic were among the other major buyers for insulated wires and cables, while, Yugoslavia and German Democratic Republic were the leading importers for aluminium conductors. Iran was the foremost buyer for bare copper conductors, followed by Singapore, Qatar, Sri Lanka, New Zealand, Jordan, Kuwait and Hong Kong.

Adding to the export effort in the line, M/s. Industrial Cables (India) Limited, Industrial Area, Rajpura Township, Rajpura (Punjab), who are manufacturing multi core and single core paper insulated and PVC insulated bare cables, were able to improve their exports to Rs. 13.70 million in the year ending October 1972 as compared to Rs. 13.20 million in the preceding year. The company is, in fact, reported to be the largest exporter of power cables in the country, having contributed nearly one - fourth of the total exports in this variety. Earlier, it earned a Certificate of Merit in recognition of its export performance by the Engineering Export Promotion Council. It is also recognised as an export house by the Government of India.

Along with the increasing exports, the turnover of the Rajpura company during the year ending October 1972 also increased by over 18 per cent to Rs. 46.4 million from Rs. 39.4 million in the previous year. Lately, the company is engaged in diversifying its activities into new lines of manufacture. It has obtained a letter of intent for production of groove contact wire (trolly wire) required by the Indian Railways for its electrification programme. They are also setting up a steel wire project in Haryana State at an estimated cost of about Rs. 10 million. The plant is expected to go on stream by July-August this year. They have obtained permission to manufacture AAC and ACSR conductors and have lately approached the Government for permission to manufacture XLP cables in the country.

The total production value of all types of cables and wires in the country rose to Rs. 1490 million in 1971 from about Rs. 320 million a decade back. The types of cables manufactured at present include bare copper conductors, aluminium conductors, steel reinforced, (ACSR and AAC conductors), VIR and PVC cables and power cables—PILC and PVC—including special cables such as mining, quarry and trailing cables, telephone cables and winding wires.

MORE FOREIGN EXCHANGE FROM TELEPHONE EXPORTS

The Indian Telephone Industries (ITI) Limited, Dooravani Nagar, Bangalore-16 has improved its overseas sales during 1972-73 as compared to the previous year. The export value rose to Rs. 4.10 million from Rs. 3.20 million in the comparable years. On hand, the firm has export orders worth Rs. 16 million and hopes to exceed its previous year's export performance in 1973-74.

In the first quarter of 1973 (January - March), ITI has earned Rs. 1.87 million through its export trade. In this quarter, the major importing country was Kenya (Rs. 0.46 million), followed by Nepal (0.41 million), U.K. (Rs. 0.29 million), Burma, Bhutan and Sri Lanka. Among the other buyers were Australia, Belgium, Greece and the Soviet Union. Among the specific items supplied to Kenya in the quarter were Group Selectors, relay sets, Cabinet type private automatic exchanges and telephone exchange equipment and spares. Nepal sought from ITI about 100 numbers of auto desk telephones with plug-in type automatic volume regulator, 72 numbers of switching telephone auto desk internal extensions, cross bar exchange equipment, electronic measuring instruments and spares for cross bar exchange equipment. To U.K. selector mechanisms were mainly supplied to fetch as much as Rs. 0.3 million.

The value of ITI's production during 1972-73 was estimated at Rs. 3410 million. In the year, the export earnings worked out to 12 per cent.

TYRES AND TUBES ON EXPORT FRONT

India-made tyres and tubes are enjoying growing popularity in recent years, not only in developing countries but also in developed countries like U.S.A. and U.S.S.R. In 1971-72, the export earning of these items rose to a level of Rs. 70 million compared to Rs. 55 million in 1970-71 and Rs. 41 million in 1969-70. During the first half of 1972-73 (April-September '72), these exports amounted to Rs. 44.18 million.

Varietywise, the export composition in 1971-72 was : tyres of trucks and buses Rs. 43.30 million; tyres for off the road vehicles Rs. 8.30 million; cycle tyres Rs. 3.88 million; motor tyres Rs. 3.07 million; tyres for other vehicles Rs. 1.43 million; tractor tyres Rs. 0.87 million and motor-cycle tyres Rs. 0.12 million. Additionally, tubes for various types of vehicles were also active in the export trade during the year. The export value was : tubes for trucks Rs. 4.5 million; cycle tubes Rs. 2.25 million and tubes for motor cycles Rs. 0.60 million. Tubes for motor and tractor tubes were also active in the export trade.

Yugoslavia, Czechoslovakia, U.S.S.R., Sudan, Burma, Kuwait, Hungary, U.S.A., Korea Republic, Afghanistan, Indonesia and Nigeria were the prominent destinations for tyres while tubes were exported to Yugoslavia, U.S.S.R., U.S.A., Sudan, Czechoslovakia, Korea Republic, Ghana, Singapore, Nigeria, Rumania, Indonesia and Afghanistan.

M/s. Dunlop (India) Limited, 15 Chitaranjan Avenue, Calcutta 13, one of the manufacturers in the line, earned a total of Rs. 32.20 million, mainly through export of their nylon tractor tyres. In fact, the party continued to be the largest exporter in the tyre industry in the country during the year. Besides, consequent on the increasing expertise built up by the firm in international marketing as an Export House, they were able to export a variety of goods made by small scale manufacturers also. The Calcutta firm is fully alive to the importance of research and development and their activities in this sphere relate to product design, equipment development and material development. The firm is also going ahead with its project for setting up a Research and Development Centre for cycle tyres and tubes. This project is likely to be completed during 1973-74.

EXPORT PERFORMANCE AND POTENTIAL

FAVOURABLE TRADE BALANCE FOR 1972

As compared to an unfavourable balance of trade at the level of Rs. 2890 million in 1971, India's external trade registered a favourable balance at Rs. 1830 million in 1972. The export earnings were of the order of Rs. 15260 million in 1971 and Rs. 18620 million in 1972, while the import bill stood at Rs. 18150 million and Rs. 16790 million in the comparable years. In the first quarter of 1973 (January - March) exports amounted to Rs. 4080 million and imports were Rs. 3520 million and the favourable balance of trade was Rs. 560 million. In contrast, the first quarter of 1972 witnessed an export level of Rs. 2690 million and imports were Rs. 3030 million and the unfavourable balance of trade was Rs 340 million.

The favourable balance of trade during 1972 was thus a result of increase in exports by 22 per cent and the decline in imports by 7.5 per cent. For the financial year 1972-73, the surplus trade balance is likely to be of the order of Rs. 1310 million.

Among the major items that contributed to the increase in exports during 1972 over the preceding year were leather and leather manufactures, handicrafts, jute manufactures, cotton piecegoods, unmanufactured tobacco, fish and fish preparations, tea, iron ore, cotton yarn and thread, oil cakes and chemicals and allied products. The improvement in the export earning of these products becomes obvious from the table given below :

(Rs. million)

Item	1971	1972
Leather and leather manufactures	835.40	1414.00
Handicrafts	757.10	1096.80
Jute manufactures including yarn	2412.50	2710.50
Cotton piecegoods	742.50	948.80
Unmanufactured tobacco	402.20	574.90
Fish and fish preparations	353.30	532.40
Tea	1447.90	1597.90
Iron ore	1025.50	1131.70
Cotton yarn and thread	143.40	245.80
Oil cake	438.40	520.30
Chemicals and allied products (excluding essential oils and plastic materials).	284.30	333.80
Total including other items	15260.00	18620.00

Among the items for which the export earning recorded decline, engineering goods earned Rs. 1330.20 million in 1972 against Rs. 1379.70 million in 1971; iron and steel's earnings fell to Rs. 181.00 million from Rs. 282.60 million, cashew kernels to Rs. 665.40 million from Rs. 660.60 million and spices to Rs. 307.20 million from Rs. 373.70 million.

On the import side, the major commodities whose imports fell sizeably in the first three quarters of 1972 (January-September) as compared to the same period in 1971 include cereals and cereal preparations, raw cotton, chemicals, non-ferrous metals and transport equipment. In 1971, Indian imports expanded by 14 per cent. This rapid increase was largely due to liberalisation of import licensing which was motivated by a desire to stimulate industrial growth. In 1972, the position reversed because of cessation of aid-financed imports, reduction in imports of raw cotton and lower international prices for non-ferrous metals. This decline, however, is not likely to continue during 1973 due to the need to import items in short supply such as steel, fertilizers, oils, fats, and foodgrains.

The Aid-India Consortium assessed India's requirements during 1972-73 at $ 1250 million including non-project aid amounting to $ 700 million. Indications of aid given by the Members at the Consortium Meeting amounted to $ 800 million, excluding Germany and U.S.A. Against these indications, agreements for a total of $ 735 million had been signed so far. The net inflow of external assistance has tended to fall off. As amortisation and interest payments on past debts often contracted under harder items absorbed progressively increasing amounts of exchange resources, the net inflow of external assistance dropped off from Rs. 8630 million in 1967-68 to only Rs. 3550 million in 1971-72. In 1972-73 the net aid transfer is expected to be around Rs. 1230 million.

The Government of India have been sparing no effort to promote exports and save on imports to the extent possible. The import policy for the current financial year 1973-74 envisages greater allocation of industrial inputs in respect of selected priority industries particularly those that have substantial export potential or which would contribute to the net saving in imports. Special programmes have been drawn up to expand the output of major commercial crops like jute, cotton and oilseeds. With these measures the country's balance of trade is likely to improve further.

INDIA'S EXPORT POTENTIAL OF TECHNICAL KNOW-HOW

Addressing the recent session of United Nations Industrial Development Organisation (UNIDO), India's representative, Mr. A. N. Banerji, recapitulated the experience of India over the past twentyfive years since its independence. Notwithstanding the problems that had to be faced from time to time, India concentrated a great deal on heavy and basic industries. This decision has now enabled the country to establish capacities and improve capabilities over a wide range of industries. India today has a wide profile of heavy and basic industries and can produce complete plant and equipment in varied production areas. Alongside this production capability, the country has also secured - slowly but steadily - capabilities for technical consultancy, engineering design and research and development. These capabilities enable the growth of indigenous technology and adaptation of imported technology. India has also made a beginning in the field of export, apart from traditional items, of non-traditional items which she has never exported before. Over and above, India has been exporting consultancy services and to a certain extent, technology to countries that have shown interest in them.

India has developed the capability for transfer of know-how in certain fields and attaches the utmost importance to share such knowhow with other developing countries and in those cases where it has actually done so, there has been a ready recognition of the relevance of the experience of one developing country to another. India's technical consultants have been associated with the development programmes in a number of other developing countries. They are also being substantially associated with projects in several countries in Asia and Africa. Its technical experts have been sent to a number of countries under bilateral programmes. In view of its own foreign exchange difficulties, India cannot hope to provide pure financial aid on any substantial scale but within its own limitations, India has tried to provide supplier's credit as well, within reasonable limits. The country permits its manufacturers to participate in establishing joint ventures abroad, on the basis of minority participation and that too limited to the extent of machinery and knowhow supply. It has approved over 130 such requests from its manufacturers. Nearly 40 industries in other countries have been established in this manner.

In the field of small scale industries, India's organisations have been invited by a number of other countries for conducting surveys and providing assistance. As a part of the scheme for exchange of experience among developing countries, India can provide training facilities to other developing countries engaged in the same tasks as India is, as well as supply consultancy services, technical knowhow and equipment up to the extent that its resources permit.

INDO-YUGOSLAV TRADE PROSPECTS

A high-powered Indian Trade and Economic Delegation to Yugoslavia recently led by India's Deputy Minister of Commerce, Mr. A. C. George, has made an assessment of the Yugoslav market for trade under free foreign exchange payment system that was introduced since January 1, 1973. The Delegation's assessment has revealed that the Yugoslav economy offers scope for Indian exports of both traditional and non-traditional commodities at the level of raw materials, semi-processed and processed products.

Illustrative examples of such products are rubber tyres and tubes, engineering items including auto ancillaries, railway wagons, refrigeration and air conditioning equipment, commercial trucks, bicycle components, handtools, precision and diamond tools, apart from traditional commodities and mining items like iron ore.

Similarly there is a good prospect of India importing from Yugoslavia items like ships, tankers, cargo carriers, ship ancillaries, steel materials, non-ferrous metals, mercury gas cylinders, capital goods and components for agricultural machinery. The Indian Delegation felt that in future, if Yugoslav supplies in these items could forthcome at internationally competitive prices, it would be possible for the Yugoslav side to improve their exports to India.

The high-powered Indian Delegation was sent to Yugoslavia (in April 1973) in pursuance of the decision taken at the discussions held between the Indian and Yugoslav Delegations at the time of Yuogslav Prime Minister's visit to India in early March, 1973. This Delegation covered in their discussions subjects such as ship and shipbuilding, India's import of power generation equipment, setting up of working groups to study the potential for participation in projects in third countries and growth in bilateral trade transactions.

During the recent visit of the Indian Delegation to Yugoslavia, certain agreements have been reached between the two countries. The Indian side expressed its interest in placing further orders for ships on deferred payment basis, if the rates are competitive. In exchange of ship ancillaries, the Yugoslav side evinced interest in import of certain items from India for shipbuilding uses. A co-ordination committee would be set up at Rejekport in Yugoslavia for regulating the movements of cargo in the vessels of both the countries on an equitable basis. The Yugoslav side expressed interest for the production of equipment for use in the power development programme of India during her Fifth Five-Year Plan. Both sides also agreed that the aspect of joint ventures in third countries should be further examined and participation of their respective industrial trading organisations in joint-tendering for export of plants, equipment and services in third countries as well as taking up turnkey projects including power projects should be encouraged.

INCREASE IN EXPORT OF MANGOES

During the first six months of 1972-73, 1,783 tonnes of mangoes valued at Rs. 4.86 million were exported by India. In 1971-72, the export was 1,325 tonnes at a value of Rs. 2.60 million.

Indian mangoes are mainly exported to U.K., Bahrain, Dubai, Kuwait, Muscat and Qatar. Besides these, small quantities of mangoes are also exported to Afghanistan, Iran, Italy, Lebanon, Malaysia, Netherlands, Poland, Singapore, Sweden and Switzerland.

The most popular variety of mangoes acceptable to overseas buyers is Alphonso. Other varieties are also being exported in limited quantities.

PLASTIC AND LINOLEUM EXPORTS EARN MORE

India's export earning of plastics and linoleum products rose to Rs. 73.90 million in the first eleven months of 1972-73 (April '72–February '73) as compared to Rs. 63 million in the corresponding period of the preceding year, registering an increase of about Rs. 11 million.

Of the total increase in the export value, the major share was contributed by processed goods of plastics which earned Rs. 60 million as against Rs. 44.41 million. Spectacle frames constituted the major item responsible for the increase in this group. Their export value increased to Rs. 14.87 million from Rs. 3.9 million in the corresponding period of the previous year. Similarly, plastic moulded and extruded goods netted Rs. 16.26 million against Rs. 8.17 million. Laminates also recorded a sizeable improvement to Rs. 1.39 million from Rs. 0.53 million. Besides these important varieties, polyethylene film sheets and bags (including woven sacks) has been yet another promising variety of export and its foreign exchange earning shot up to Rs. 4.61 million from a meagre amount of Rs. 0.97 million.

The other items which registered increase were: plastic electrical accessories (Rs. 3.61 million against Rs. 2.79 million) and plastic imitation jewellery (Rs. 4.45 million against Rs. 3.55 million). Interestingly; polyethylene rigid and flexible pipes, plastic sequins, vinyl asbestos floor tiles, plastic brushes, polyurethane foam and its products and nitro cellulose cloth, GRP manufactures, plastic dental products, vacuum formed products, and matallised plastic products also made some headway in the export field in the period under review af 1972-73, while their export performance was practically nil in the previous year. The export value of expanded polystyrene products, plastic bangles and handbags and other PVC fabricated goods, foam leather and sheeting PVC leather cloth, PVC sheets, however, suffered a setback in their export earning during the year.

The export earning of linoleum raw materials and polylined jute goods also witnessed a marginal improvement from Rs. 13.14 million to Rs. 13.37 million during the period under review. The export value of linoleum (jute based) improved to Rs. 7.79 million from Rs. 6.39 million. Felt based linoleum earned about Rs. 600,000 while in the previous year, the item did not appear in the export list. The foreign exchange earning of polylined jute was, however, less at Rs. 4.72 million as against Rs. 4.92 million. Other items, of export during the period included cellulose acetate moulding powder, polyethylene moulding powder (low density and high density), general purpose polystyrene, PVC compound (rigid and flexible), phenol formaldehyde, moulding powder and urea formaldehyde moulding powder.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

INDIA'S ANNUAL PLAN FOR 1973-74

India's Annual Plan for the year 1973-74 lays emphasis on the agricultural and core industrial sectors. A total outlay of Rs. 43642.40 million is envisaged in the plan representing a ten per cent step up over that in the preceding year. Formulated in keeping with the country's basic objective of accelerated economic growth in the framework of greater social justice and economic self-reliance, the plan calls for massive increase in exports coupled with adequate expansion of such vital import substitutes as iron and steel, fertilizers, petroleum and nonferrous metals.

The targets of production envisaged in the Annual Plan for foodgrains and major commercial crops are : Foodgrains 115 million tonnes; oil seeds 9.50 million tonnes; sugarcane (in terms of Gur) 13.50 million tonnes; cotton 6.50 million bales and jute 5.60 million bales.

A target of additional 1.5 million hectares is expected to bring the total area under minor irrigation, to about 7.2 million hectares which corresponds to the Fourth Plan target. Under major and medium irrigation, the targets of additional potential and additional utilisation envisaged are 1.06 million hectares and 1.21 million hectares respectively. Emphasis will be on the completion of the continuing schemes. In selecting new schemes preference will be given to those in drought prone areas and backward areas.

In power development, priority has been accorded to construction of transmission lines. The generating capacity is expected to be stepped up to 19.46 million kw. from about 17.53 million kw. in 1972-73. Under the Rural Electrification programme, 300,000 pump-sets would be energised and 13,000 villages electrified. Thus, by the end of the Fourth Plan, about 2.4 million pump-sets would be in operation and 148,000 villages would have been electrified.

With a view to sustaining the tempo of industrial production, considerable emphasis has been laid in the Annual Plan for fuller utilisation of capacity and speedy completion of the on-going programmes. In crucial industries like steel and fertilisers, utilisation of capacity at 75-80 per cent and 85 per cent respectively is expected during the year Of the total outlay of Rs. 7511.7 million provided for Industry and Minerals, nearly 60 per cent will be directed towards accelerating the programmes in basic industries such as steel, fertilisers, petroleum, mineral development and non-ferrous metals.

Among the major developments, envisaged under steel in 1973-74 is the expansion of the Bhilai Steel Plant and the acceleration of the tempo of construction work on the 1.7 million tonne stage of Bokaro Steel Plant. The Annual Plan places the target of steel ingots production at 7.8 tonnes.

The targets of production of aluminium and copper is estimated at 210,000 tonnes and 20,000 tonnes respectively. In the heavy engineering sector, the performance of the various units of M/s. Heavy Engineering Corporation, Ranchi improved considerably as a result of the measures initiated by the Government in 1972-73. Further improvements in the performance of these units is expected during 1972-73. In fertilizers, several new projects with an additional capacity of about 800,000 tonnes of nitrogen are expected to be completed during 1973-74. The targets of production at the end of the year are 1.4 million tonnes of nitrogen and 0.4 million tonnes of phosphates.

The production of cement is expected to increase to 18 million tonnes from 16.5 million tonnes in 1972-73. The production of paper and paper-board is expected to go up to 850,000 tonnes, thus fulfilling the indicative target envisaged in the Fourth Plan.

Production of iron ore is expected to step up to 40 million tonnes from 34 million tonnes in 1972-73, and coal to 80 million tonnes compared to 75 million tonnes in 1972-73. Production of crude petroleum and petroleum products are expected to go up to 7.8 million tonnes and 20.5 million tonnes respectively.

SHIPPING AND SHIP-BUILDING

India ranks sixteenth among the maritime countries of the world. In terms of tonnage carried, her share in the world sea-borne trade is about 2 per cent. The operative tonnage of the country has increased from 192,000 GRT in 1947 to 2.16 million GRT now, with another 1.5 million GRT on order. India's public sector owns about 47 per cent of the national tonnage (1.22 million GRT). The country's ships now carry about 20 per cent of maritime trade and they are now operating on all the important overseas trade routes.

The Shipping Corporation of India Limited in the public sector has grown to be one of the largest shipping lines of the world and has acquired a prominent position in India's shipping industry. The tonnage of the Corporation has risen year after year, and stood at 1.31 million DWT at the beginning of 1972-73. Its fleet contained 78 ships (1.38 million DWT) by the year 1971-72. An interesting feature of the expansion of the Corporation's fleet relates to the planned diversification of its composition into bulk carriers, versatile

Ore-Oil-grain carriers and large size tankers, besides cargo liners. The Corporation has 39 more ships on order aggregating 1.64 million tonnes deadweight. About 86 per cent of the total tonnage on order constitutes special types of ships like steel tankers.

In the field of ship-building also, the Indian economy has not lagged behind. An integrated development programme of the Hindustan Shipyard costing Rs. 77 million is going ahead. The programme is designed to raise the annual capacity of ship building at the Yard from three ships to six ships of 18,000 DWT each, i.e. from a total of about 40,000 DWT to about 80,000 DWT. In addition a major shipyard designed to build ships of 85,000 DWT is under construction at Cochin at an estimated cost of Rs. 454 million and the work on the construction of the first is likely to commence in 1974.

The Dry Dock commissioned at Vizag in August 1971 is the biggest and most modern in the country capable of accommodating ships of 57,000 to 70,000 DWT for repairs.

The Cochin shipyard which is designed to have two docks, one for building ships up to 85,000 tonnes DWT and another for taking ships of sizes up to 100,000 tonnes DWT for repair purposes is being constructed as planned. The project has been undertaken with technical co-operation of Messrs Mitsubishi Heavy Industries, Japan. On completion, (October, 1975 being the target) and in full production, the shipyard is expected to build two ships per year of 66,000 to 85,000 tonnes each. The target for annual ship repair capacity is one million tonnes GRT.

Alongside the progress on shipping and ship building, the aspect of major port development is also receiving close attention. Presently about 95 per cent of the country's export trade is despatched by sea. Under the Fourth Five-Year Plan ending 1973-74, massive development programmes involving an outlay of about Rs. 3600 million have been undertaken by the various ports of the country to provide for deeper draughts at the ports and to introduce container facilities to keep abreast of modern technology in shipping. On completion of these schemes, the Vizag part is expected to be the first to handle 100,000 DWT vessels. The loading rate at the port is to increase from about 20,000 tonnes per day to about 100,000 tonnes a day.

The traffic handled by the major ports in the country was 60 million tonnes in 1971-72. By 1973-74, it is anticipated that this traffic will be around 66 million tonnes. Among the important projects of port expansion being undertaken, the Calcutta Port (Haldia project), envisages the construction of six berths within an enclosed dock consisting of a coal berth, ore berth, fertiliser berth and a general cargo-cum-container berth, a berth for handling heavy lifts and finger jetty for handling salt and an oil jetty outside the Dock System to cater to the requirements of oil tankers. The Port Expansion Scheme at Bombay is to provide eight additional berths. The construction of outer harbour at Madras consisting of an oil berth and an ore berth is in progress. The oil berth in the outer harbour was already commissioned and it has been designed to provide facilities for oil tankers of 77,000 DWT initially and 100,000 DWT ultimately. The mechanised ore handling scheme at Madras port is intended for handling 5 million tonnes of iron ore per year to start with, and 8 million tonnes later at a rated capacity of 8,000 tonnes per hour.

The Vizag outer harbour project envisages the construction of an outer harbour capable of handling ore-carriers up to 100,000 DWT initially and up to 200,000 DWT finally. The outer harbour will be provided with mechanical ore-handling equipment with a rated capacity of 8,000 tonnes per hour which would be stepped up to 16,000 tonnes per hour subsequently. Besides these major projects, the work at other places such as at Kandla, Marmugao port, Paradip port, Mangalore and Tuticorin is under active progress.

With the resurgence of the country's maritime capability in the post independence era, it was felt essential that India's major ports should focus their attention on containerization. The country's containerisable cargo in its overseas trade is indeed impressive with Catcutta offering the largest volume of containerizable cargo.

Besides the development plans at the country's major ports, considerable sums of investment are planned to be diverted for the development of certain minor ports including Gopalpur (Orrisa), Kakinada (Andhra Pradesh), Cuddalore (Tamil Nadu), Beypore (Kerala), Karwar (Mysore), Mirya Bay (Maharashtra) and Porbunder (Gujarat).

ON PETROLEUM INDUSTRY

Extensive exploration and self-sufficiency in refining are the twin objectives of petroleum planning in India. In the field of crude oil exploration, extensive and intensive efforts are being made to discover more oil on shore and off shore. In the context of refining, not only the refining capacity is being improved year to year but refining technology itself is witnessing rapid strides in the country.

The Oil and Natural Gas Commission is the principal organisation in India engaged in the exploration and production of crude oil. The Commission carries out geological and geo-physical surrveys for exploration and drilling and other prospecting operations to prove and estimate petroleum reserves. Since its inception, the Commission drilled over 990 wells up to 1972. In the period, the Commission produced and sold a total of 25.87 million tonnes of crude oil. In regard to the off-shore operations undertaken by the Commission, exploratory drilling on certain off-shore structures in the Arabian sea adjoining the Gulf of Cambay is expected to start soon. A self-elevating, self-propelled, mobile drilling platform, built by a Japanese firm has been delivered to the Commission.

M/s. Oil India Limited is also engaged in exploration and drilling operations. The total number of wells drilled by this company up to 1972 was 307 developmental wells and 16 exploratory wells with a total metreage of nearly 990,000 and 71,000 respectively.

On the refining side, the capacity of nine refineries in India by the end of 1972 was of the order of 20 million tonnes - 11.75 million tonnes in the public sector and 8.25 million tonnes in the private sector. The quantity of crude processed in these refineries was 19.67 million tonnes in 1972 of which 11.84 million tonnes was in the public sector. To create additional refining capacity, the capacity of refineries at Barauni and Cochin is being expanded and new refineries are being put up at Haloia, Bongaigaon and Mathura. It is also proposed to expand the capacity of Koyali refinery. The performance of the five public sector refineries–all under the control of Indian Oil Corporation–has been noteworthy. As against a target of 11.75 million tonnes, these refineries processed crude oil to the extent of 11.84 million tonnes, in 1972. Among the several existing undertakings, the Cochin refinery Limited which has a capacity of 2.5 million tonnes per year has plans to increase its capacity to 3.3 million tonnes per annum. Recently, a plant for the manufacture of coking gas has been commissioned at the Cochin refinery. Besides the Madras Refineries Limited, M/s. Lubrizol India Limited and M/s. Lube India Limited are also engaged in expansion plans.

FACTS ON FERTILIZERS IN INDIA

Fertilizer industry in India has been placed under the core sector for development. The rates of installed capacity and annual production have been improving year after year. The installed capacity which was 1.3 million tonnes of nitrogen and 415,000 tonnes of phosphorous pentoxide (P_2O_5) at the end of 1971-72 increased to 1.46 million tonnes of nitrogen and 0.5 million tonnes of P_2O_5 during 1972-73, according to the Annual Report of the Ministry of Petroleum and Chemicals for the year 1972-73. Fertilizer production in 1972-73 is expected to be of the order of 1.1 million tonnes of nitrogen and 320,000 tonnes of P_2O_5 as compared to the production of 952,000 tonnes of nitrogen and 278,000 tonnes of P_2O_5 in 1971-72. Presently, there are 21 fertilizer projects in India in various stages of implementation with a total capacity of 4.13 million tonnes of nitrogen and 673,000 tonnes of P_2O_5. Of these, it is expected that 8 projects having a capacity of 820,000 tonnes of nitrogen and 6,000 tonnes of P_2O_5 will commence production in the current year (1973-74.)

With a view to achieving self-sufficiency in fertilizers at the earliest, the Indian Government have accorded priority to the establishment of new fertilizer plants. The future fertilizer plants are planned to be based on fuel oil or heavy petroleum fractions as a feedstock to the extent feasible.

In the public sector, there are nine projects in active production and they are : Sindri with an installed capacity of 90,000 tonnes, Nangal (80,000 tonnes), Rourkela (120,000 tonnes), FACT at Alwaye (82,000 tonnes), Trombay (81,000 tonnes), Neyveli (70,000 tonnes), Gorakhpur (80,000 tonnes), Namrup (45,000 tonnes), and Madras (164,000 tonnes). In the private sector, the nitrogenous fertilizer plants in production are in Gujarat with an installed capacity of 216,000 tonnes, Ennore (16,000 tonnes), Vizag (80,000 tonnes), Kota (110,000 tonnes), Varanasi (10,000 tonnes) and Kanpur (20,000 tonnes).

In the Phosphatic Fertilizer Group, the public sector projects in production are : FACT (26,500 tonnes), F.C.I. Trombay (36,000 tonnes). Madras (85,000 tonnes) and Superphos (single) (36,500 tonnes). In the same group, the private sector units have an installed capacity of 316,000, tonnes and they include the units at Ennore, Gujarat State Fertilizer Corporation (Baroda) and at Vizag.

The Fertilizer Corporation of India has five units under production and ten projects under construction. This wholly Government owned Corporation witnessed increase in production in the units under its control, to the tune of 15,000 tonnes of nutrients in the first nine months of 1972-73 (April-December 1972) as compared to the same period of the preceding year. The five units engaged in production under the aegis of the Corporation are at Sindri, Trombay, Namrup, Gorakhpur and Nangal.

There are quite a few projects under construction. For instance, the Durgapur project is to be commissioned soon. Mechanical erection of the Barauni plant has just been completed. The Namrup expansion project is to be completed shortly. These three units are designed to produce, each 151,800 tonnes of nitrogen in the form of 330,000 tonnes of urea every year. There are two coal based plants at Ramagundam and Talcher. These plants are designed to produce 495,000 tonnes of urea and 228,000 tonnes of nitrogen every year. These projects are only illustrative examples. There are others taking shape such as Sindri Rationalisation Scheme, Gorakhpur Expansion Project, Haldia Unit, Trombay Expansion, Korba project, Nangal Expansion and Sindri Modernisation.

The Madras Fertilizers Limited was commissioned in late 1971 and has started production of ammonia, urea and NPK. The Fertilizer and Chemicals Travancore Limited (FACT) is executing the Fourth Stage Expansion Project at Udyogamandal, near Alwaye and the Cochin Fertilizer Project Phases I and II. The Udyogamandal unit of FACT has capacity of 82,000 tonnes of nitrogen and 33,500 tonnes of P_2O_5 per year, the products being Ammonium Sulphate, Ammonium Phosphate, Ammoninm Chloride and Superphosphate. The Expansion Scheme of the Udyogamandal unit on its completion will have a capacity of 43,500 tonnes of P_2O_5. The phase I of the Cochin Fertilizer plant would have a capacity of 152,000 tonnes of nitrogen in the form of urea and this project is expected to go into commercial production very soon.

The phase II of the Cochin project envisages production of 485,000 tonnes of NPK fertilizers and 7500 tonnes of cryolite per annum. FACT also has a design and engineering organisation known as FACT Engineering and Design Organisation (FEDO). It undertakes engineering and contract jobs either within the country or abroad. It has secured a contract valued at Rs. 120 million against international competition for the design, supply and commissioning of sulphuric acid plant and phosphoric acid plant and a triple superphosphate plant for the Khetri-Copper cum Fertilizer project.

PROGRESS IN PETRO-CHEMICALS

A notable progress has been achieved by the Indian economy in the production of raw materials, intermediates and end-products in the field of petro-chemicals.

In the raw material sector, the first petro-chemical complex being set up in the public sector, the Gujarat Petro-Chemical complex is being implemented by the Indian Petro-Chemical Corporation. The Gujarat Complex mainly consists of Aromatics Project, and Olefins Project consisting of a Naphtha cracker and its associated downstream units. The Corporation (IPCL) is also taking preliminary steps to implement a refinery-cum-petrochemicals complex in Assam and a polyester filament yarn unit in Gujarat. The Aromatics Project of the Gujarat complex, which is to produce DMT (24,000 tonnes), orthoxylene (21,000 tonnes) and mixed xylenes (2,5000 tonnes), based on a special fraction of naphtha obtained from the Gujarat refineries is to be soon commissioned, in two phases. The Olefins project envisages the production of a number of olefin streams by cracking 453,000 tonnes naphtha per year. This project is expected to go on stream in 1974. The proposed refinery-cum-petrochemicals complex in Assam will consist of the Bongaigaon refinery with a throughput of one million tonnes of crude, and a petro-chemical complex consisting of an integrated 30,000 tonnes DMT—Polyester Fibre unit. In addition to the public sector projects, there are three naphtha crackers in the private sector, two of which have already been in active operation. The third one which has also commenced production is to improve upon its capacity soon.

The primary products produced by the Naphtha cracker in Gujarat are to be processed into intermediates and end products by seven units which are being put up by the Indian Petrochemicals Corporation. These units have the following capacities per annum: acrylonitrile (24,000 tonnes), polyethylene (80,000 tonnes) polypropylene (30,000 tonnes), detergent alkylate (30,000 tonnes), ethylene glycol (20,000 tonnes), synthetic rubber (20,000 tonnes) and acrylic fibre (12,000 tonnes).

All the above projects are expected to go on stream by 1975. Foreign collaboration proposals for these projects are in various stages of Governmental approval and implementation. The availability from the above projects of large quantities of plastic resins and synthetic rubber is expected to enable the plastic and rubber fabricators, mainly in the medium and small sectors, to use their capacities better. The augmentation of the production of various plastic processed goods is also expected to accelerate the replacement of scarce and imported materials like steel, wood, non-ferrous metals and vegetable oils. Detergent alkylate that will be available from one of the projects is to be used for the manufacture of synthetic detergents. Additionally, the Gujarat State Fertilizer Company is implementing a project for the production of caprolactum. The company is also implementing a scheme for the manufacture of 4320 tonnes of nylon chips from caprolactam. Further, a project for the manufacture of 7,000 tonnes of polyester filament yarn is being set up jointly by the Government of India and Cooperatives of yarn users.

At for private sector's production of petrochemical intermediates and end-products, five units have been approved by the Government of India for the manufacture of polyester fibre. Six nylon filament yarn units are also in production. Of the petro-chemical based plastic raw material units, there is one manufacturing Low Density Polyethylene and two PVC units. There are also two units producing styrene and polystyrene. The Styrene unit has already started production.

The Indian Petro-chemical Corporation Limited are also taking vigorous steps to set up a research and development wing at Baroda. The research department will undertake aspects such as engineering oriented research, research in catalyst utilisation of bye-products, polymers and non-cellulosic synthetic fibres.

BAN ON IMPORT OF NATURAL RUBBER

The Government of India have imposed total ban on import of natural rubber from the licensing period April - 1973 to March - 1974.

The actual stocks of natural rubber and synthetic rubber totalled 59415 tonnes as on April 1, 1972. It has been estimated that rubber production during 1972-73 would be of the order of 149,000 tonnes (113,000 tonnes of natural rubber and 36,000 tonnes of synthetic rubber). The estimated requirements of special purpose synthetic rubber during 1972-73 to be met by imports were 6000 tonnes. Thus the total supply during 1972-73 of natural rubber was of the order of 157,277 tonnes and that of synthetic rubber was 57138 tonnes thus bringing the combined supply to the tune of 214,415 tonnes. As against this, the estimated consumption during 1972-73 was of the order of 150,000 tonnes (110,000 tonnes of natural rubber and 40,000 tonnes of synthetic rubber). The estimated balance stock as on April 1, 1973 was 64,415 tonnes (47,277 tonnes of natural rubber and 17,138 tonnes of synthetic rubber. Having regard to the comfortable position of surplus rubber, the Rubber Board, Kottayam, recommended that the import of natural rubber be totally banned, as the types of rubber being imported mostly comprise Pale Latex Crepe and Standard Malaysian Rubber which could be easily substituted with indigenous natural rubber.

INDUSTRIAL PRODUCTION UP

The level of industrial production in India in December 1972 rose by 6.9 per cent and 2.1 per cent compared to the corresponding month in 1970 and 1971 respectively, according to the figures estimated by the Central Statistical Organisation, Government of India, Calcutta.

The index of production in December 1972 stood at 205.8 and that for November at 203.2 (base 1960=100). The December 1972 index revealed a rise of 13.2 points and 4.2 points over the corresponding months of 1970 and 1971 respectively. The revised index for October 1972 was 197.9.

MORE TELEPHONE CONNECTIONS

The Posts and Telegraphs Department provided 100,730 new telephone connections during 1972-73 in India. This brings the total number of connections in the country to 1,157,390 as on March 31, 1973.

As against the total equipped capacity of 1,375,422 lines, this represents a capacity utilisation of over 84 per cent, which is a record.

A brief look-back on the working connections and equipped capacity would reveal that as on April 1, 1973 there were 1,056,660 and 1,275,610 numbers respectively in 1972; 981,355 and 1,193,790 numbers in 1971 and 891,325 and 1,120,490 numbers respectively in 1970.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

FLUID ENERGY MILL

The Indian Institute of Technology (IIT), Madras, has successfully developed a fluid energy mill for fine grinding of products into micron size particles required in many industries dealing with paints, cosmetics, minerals, explosives and various chemicals. The product from the conventional mills such as ball mills is coarser and also suffers from lack of lustre and other desirable characteristics due to generation of heat during grinding. Fluid energy mills have thus a great potential demand in the country. These are at present being imported.

In the fluid energy mill grinding results from impact and attrition between rapidly moving particles of the material being ground. The energy to achieve these high particle velocities is supplied by a compressible fluid like air, gas or steam, which enters the mill at high speeds through specially designed nozzles. The classification of the ground material takes place due to difference in the centrifugal forces acting on particles of different sizes when moving in a curved path.

The design of the mill is simple and it has no moving parts. It consists of a vertical oval shaped tabular assembly having a feed injector nozzle on one side and the grinding nozzles at the bottom. The lower portion is known as the grinding zone and the upper as the classifying zone. Compressed air (at room temperature or preheated), freed from moisture by silica gel drier is fed to the mill through the grinding and injector nozzles. The feed material is introduced into the mill through a pneumatic feed injector. Steady feed rate of the material is ensured by the use of a vibrating feeder. Particles get partially ground in the grinding zone and travel up to the classifying zone. Coarser particles travel along the outer periphery, join the fresh feed material and again pass through the grinding zone. The particles of the required size pass through an outlet in the mill to a cyclone and get collected in the product bin. Air from the cyclone gets discharged into atmosphere through a bag filter.

The experimental mill designed and fabricated at IIT, Madras, has a capacity of 5 to 12 kg. per hour and produces materials in the size range of 5-15 microns (1 micron=1/1000 mm), depending on the hardness of the material. Some of the materials successfully ground are aluminium hydrate, antimony trisulphide, barium ferrite, brass (metal), china clay, carbon black, dye stuffs, ferro silicon, graphite, iron ore (magnetite), mica, quartz, resin, silicon and soap stone.

Fluid energy mill, the latest in grinding equipment, has several advantages over the conventional grinding equipment. These are : products are of specific particle shape and fall in a narrow size distribution in the micron range; the product is free from any contamination with metallic particles; the maintenance of the mill is easy and economical due to absence of moving parts and minimum wear; cooling effect resulting from expansion of fluid medium enables grinding of heat-sensitive materials like organic chemicals, resins etc.; by using a suitable inert fluid medium the mill can be used to grind explosive materials and simultaneous grinding and drying of the material can be achieved by using hot compressed air.

The equipment required for the fabrication of the mill falls in the range of the usual workshop equipment and is available indigenously. Air compressor, silica gel drier, screw feeder, vibrating feeder and aag filter are some of the major components required. All these are indigenously available or could be fabricated locally from indigenous materials.

OXIDIZED STARCHES

The Ahmedabad Textile Industry's Research Association (ATIRA), Ahmedabad, has developed a process for the manufacture of oxidized starches by mild oxidation using hypochlorite.

The ATIRA process has been patented. The viscosity of the starches under this process is low and is particularly adjusted to the needs of the paper industry. It is stated to be superior to conventionally oxidized starch in regard to adhesive strength, film strength and gel-forming tendency (i. e. retrogradation). It also compares well with some of the imported varieties.

A paper mill which has been using the oxidized starch for sizing, has reported favourably about the performance of oxidized starches. It has been found that 10 per cent higher size add on can be obtained compared to that obtained with conventional adhesives. Other advantages are education in damages that usually occur during calendering or drying of the sized paper; reduction in ink consumption showing improved surface properties; and improvement in the quality of paper.

Oxidized starches find largest application in paper industry for surface sizing the pigment coating. The application of oxidized starch improves the bonding of the loosely attached fibres and fillers, thereby increasing burst, tensile and folding strengths of the untreated paper. Common thin boiling starches cannot be used above 5 per cent concentration because their pastes are viscous and these pastes retrogade rapidly, forming hard gels which subsequently damage the paper during drying on cylinder. Dextrins give fluid pastes but they are tacky and yellow to brown in colour. At equivalent concentrations oxidized starch give better strength and lower stiffness compared to dextrins. Viscous pastes form a film on surface only, whereas fluid ones penetrate the paper web and interlock the fibres firmly. Hence, if an increase in the internal strength of the paper is required, oxidized starch pastes also permit higher filler properties in costing.

DEVICE FOR MEASUREMENT OF LIGHT

The National Physical Laboratory, New Delhi, has developed a cadmium sulphide photoconductive cell, used for detection and measurement of light.

In the process, cadmium sulphide powder is doped with small quantities of suitable chemicals. The powder is then mixed with an organic binder and coated on glass or ceramic substrate. Several hundred substrates can be coated at a time by screen printing technique. After the coating has dried, it is sintered at 500-700 degree centigrade in a furnace with an inert atmosphere. Contacts are applied to the cadmium sulphide with the help of silver paint. The electrodes are taken out by soldering two wires to the substrates. The piece thus prepared can be encapsulated in a plastic box or in an evacuated glass envelop. The process has been referred to the National Research Development Corporation, New Delhi, for chemical exploitation.

RAILWAY SIGNAL LAMPS TO IMPROVE ILLUMINATION

The Indian Institute of Petroleum (IIP), Dehradun, has developed a device named "Loop Device" to obtain higher luminous intensity from existing railway signal lamps with inferior or low smoke point kerosine.

The lamp fitted with this device produces the same luminous intensity while burn-lower smoke point kerosine, as is produced, without this device with super kerosine.

AGRICULTURE IN INDIA

A REVIEW

Although India's agricultural production suffered a setback due to unfavourable weather conditions in several parts of the country during 1971-72 and the production of foodgrains declined to 104.7 million tonnes in the year as compared to 108.4 million tonnes in the preceding year, wheat production moved up to a record level of 26.5 million tonnes in 1971-72 from 23.8 million tonnes in the previous year. Rice production also advanced by half a million to the level of 42.7 million tonnes. As regards commercial crops, the production of cotton moved up to a record level of 6.53 million bales, marking a rise of as much as 45 per cent over the previous year. The production of jute at 5.71 million bales also marked an increase of about 16 per cent over the previous year. The production of five major oil seeds, namely, groundnut, rape seed and mustard, sesamum, linseed and castorseed, declined to 8.3 million tonnes from the previous year's record production of 9.3 million tonnes. Sugarcane production was also lower at 11.7 million tonnes in terms of gur as compared to 13 million tonnes in 1970-71.

To meet the situation created by drought, the Indian Government organised an Emergency Agricultural Production Programme based mainly on quick maturing minor irrigation projects. It is estimated that the minor irrigation schemes implemented under the Programme are capable of providing irrigation for over one million hectares in a full year. Consequent on the success of this Programme, coupled with generally improved weather conditions in the Rabi season (winter), a record Rabi harvest was envisaged and the increased production is expected to have made up the loss of production during the last year's Kharif season (summer).

Among the various steps undertaken by the Government to promote foodgrains production, cultivation of high yielding varieties, is an important programme. A target of 22.1 million hectares to be covered under high yielding varieties is expected to be exceeded according to the Annual Report of the Ministry of Agriculture for 1973-74. Research and Development efforts are being stepped up to evolve better varieties of high yielding nature and to popularise better techniques.

Several measures have been initiated by the Government during 1971-72 to increase production of oil seeds, cotton, jute, tobacco and other commercial crops. About 520,000 hectares of irrigated area were aimed at being brought under groundnut crop. The area under rapeseed and mustard was also sought to be increased. The development of sunflower on an area of 180,000 hectares in Southern States and of soyabean on 34,000 hectares in other states has been taken up, under centrally sponsored schemes. Incentives have been provided for larger use of cotton seed oil and rice bran oil. The area under sugar cane has been expanded. Production of cotton moved to a new peak and the Incentive Cotton District Programme coupled with proposals for area extension under high yielding varieties of cotton would reveal the picture of improved cotton production. For jute, two Centrally sponsored schemes, namely, Intensive Jute District Programme and Aerial Spraying of Urea have been in successful operation in jute producing areas. Tobacco output rose to 409,000 tonnes during 1971-72 registering a rise of over 13 per cent compared to the preceding year. The increase in tobacco output created a surplus situation which was effectively dealt with through purchases by the State Trading Corporation. Development schemes for bananas, walnuts, coconut, cashewnut and lac have also been under implementation.

The production of pulses remained stagnant in recent years. Research for evolving high yielding and short duration varieties of pulses has been intensified. Three short duration varieties of arhar have been released. A Centrally sponsored scheme on production of pulses have been launched under which demonstration, seed multiplication of short duration and improved varieties are being organised.

The consumption of fertilizers in terms of nutrients has improved. This was estimated at 740,000 tonnes of nitrogen, 239,000 tonnes of P_2O_5 and 159,000 tonnes of K_2O during the Kharif season of 1972-73. These levels were higher compared to the preceding season's consumption. To popularise balanced use of fertilizers, a fertilizer promotion scheme is being implemented; to start with 26 districts were selected in 17 States for coverage in the scheme. Special emphasis is being laid on efficient soil testing programme, use of micronutrients, particularly of zinc in zinc deficient areas, and balanced use of fertilizers for maintaining the soil fertility and achieving higher production.

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Indigenous production of tractors, harvestors and other machinery is being encouraged and import of these machinery is permitted wherever necessary. The demand for tractor drawn implements and power operated machines such as seed-cum-fertiliser drills, threshers, and maize shellers is on increase in India. The Indian Standards Institution have so far standardized 56 agricultural implements, tools and machines. The manufacture of tractor drawn implements and machines has also been taken up by a public sector workshop and agro-industries corporations.

The aspect of agricultural research is also receiving close attention in India. The Indian Council of Agricultural Research (ICAR) is the central organisation to promote and coordinate agricultural and animal science research and education. The Council is presently administering 23 Research Institutes and 8 Soil Conservation Research and Demonstration and Training Centres. A number of research projects for important food and commercial crops are being implemented. New high yielding varieties of crops like rice, wheat, coarse grains, cotton and oilseeds have been identified. Rice breeders at the Central Rice Research Institute discovered new varieties that can be successfully grown in flood-affected areas. New wheat strains have been identified for low fertility rainfed regions as also high elevation areas. New varieties of barley which are highly resistant to strip rust and possess high yield potential have also been recommended. In 1972-73, two new hybrid varieties of bajra were recommended for release both under limited and adequate moisture conditions. As regards oilseeds, intensive work has been undertaken on groundnut, rape and mustard, and linseed. Six high yielding varieties of pumpkin, water melon and brinjals have also been released.

To improve agricultural production under low rainfall and dry conditions, an All India Coordinated Research Project for Dry Land Agriculture was undertaken successfully and various crop varieties suitable for cultivation in both Kharif and Rabi seasons under moisture stress conditions have been identified. The Central Soil Salinity Research Institute, Karnal, has made progress in developing suitable land reclamation measures, for growing foodgrains and commercial crops.

Agricultural commodities traditionally occupy the prime position of India's export trade. These exports earned Rs. 3430 million in 1971-72 as compared to Rs. 3260 million in the preceding year. This increase was mainly contributed by fish and fish products, unmanufactured tobacco, cashew kernels, raw jute, raw cotton, sugar, rosewood and shellac. ☐

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EXPORT ACHIEVEMENT OF BHARAT ELECTRONICS

From small beginnings in export trade, Bharat Electronics Limited (BEL), Jalahalli, Bangalore has reached the Rs. 10 million export mark in 1972-73.

It is said that India was ushered into the electronic age with the birth of BEL in 1954. Starting with the production of merely two items–medium power communication transmitters and their associated receivers, the production range of BEL today covers almost the entire spectrum of electronic equipment and componets–from radars to long distance communication equipment, a wide range of electron tubes, germanium and silicon semi-conductors, piezo-electric crystals, capacitors, measuring instruments, transformers and coils. Since 1956, the company added 250 diverse products to its production line. More new components are being added every year. Of the latest components, for which the company has started production, are silicon devices for T.V. receiver sets, power switching transistors, special high voltage current capacitors and micro capacitors for high voltages.

The firm has the availability of component know-how from over a dozen firms of international repute, particularly in the manufacture of sophisticated wireless communication equipment. It has, at the same time, made rapid strides in developing indigenous equipment like VHF communication equipment, equipment for All India Radio, storm warning radar for meteorological department, electro-medical equipment like clinical audiometers and fish finders. With regard to components too, the success of BEL's developmental work would become evident from the production pattern that they have undertaken for receiving valves, transmitting tubes, microwave tubes, crystal filters, discrete semi-conductor devices and capacitors. In many cases, the foreign collaborators have found to their surprise that the products manufactured by the Bangalore firm have been better than their own.

BEL's production value rose from merely Rs. 0.6 million in 1956-57 to about Rs. 328 million in 1971-72. Today, this public sector undertaking has five major producion divisions–three on the equipment side and two on the components side. These divisions relate to Low Power Equipment Division–producing HF/VHF communications equipment and catering to the demand of police communications, handie-talkie, air communication and army equipment; Electron Tubes Division producting receiving valves for radio sets, T.V. receivers and industrial applications, digital indicator tubes, transmitting tubes, cathode-ray tubes, monochrome TV picture tubes, X ray tubes for diagnostic purposes, and megnetrons; High Power Equipment Division producing medium/high power communication equipment for static and mobile roles for Posts and Telegraphs, Army as well as broadcasting, telecasting and studio equipment as also professional type console tape recorders for All India Radio; and Radar Division and Semi-conductor Division turning out germanium/silicon transistors and diodes for entertainment and professional applications and integrated circuits. Besides these major five divisions, the firm has separate departments for the manufacture of piezo-electric crystals, ceramic capacitors of plaquette and miniature disc-type transformers and coils and clinical and transistorised portable diagnostic audiometers. The Radar Division manufactures sophisticated fire control, field artillery and early-warning radars for the Army, frigate radars for the Navy and storm-warning radars for the Meteorological Department. This division also produces under sub-contract for ICIL the electronic portion of their digital computer.

The future development programme at BEL aims at indigenous development of a complete range of HF-VHF and UHF communication equipment using modern techniques and TV broadcasting equipment. Some of the other programmes planned by the company are micro-miniaturised X-Band Radar using Microwave Integrated Circuits, cyclone warning and wind finding radars and a range of desk calculators and minicomputers. A beginning has been made by the firm in the development and manufacture of "Thick Film" voltage regulator and audio modules.

BEL's second unit costing about Rs. 110 million is taking quick shape at Ghaziabad (U.P.) and is expected to go into production by the end of 1973. Thus, BEL has come to be an important institution in India whose products are utilized for communication on air, trains and for overseas contacts, safe landing of aircrafts, maintenance of law and order through wireless communication, as also for radio and T.V. sets. BEL is one of the notably efficient among India's public sector undertakings.

INDIA BAGS IRAQI RAILWAY CONTRACT

India has recently bagged a contract from Iraq for the construction of a 130 kilometre long railway line. The line is to connect the Phosphate mines of Akasha with Hsiabah and the contract has been secured in the face of stiff competition from other countries. The Indian Railways are to soon undertake a preliminary feasibility-cum-cost study of the proposed railway line.

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This contract is in fact, an extension of an earlier easibility-cum Cost Study carried out in 1970 by the ndian Railways for a 404-kilometre long railway line connect Baghdad, capital of Iraq, with Hsiabah on e border of Syria. The cost of the earlier project was stimated by the Indian Railway experts at about 42 illion Iraqi Dinars (Rs. 882 million) and at about 59 nillion Iraqi Dinars (Rs. 1240 million) with additional acilities.

The railway line connecting the Mediterranean Port of Latakia with Deir-ez Zor in Syria is already nder construction by the U.S.S.R. If Hsiabah and Deir-ez-Zor are connected for a length of about 120 kms. both Syria and Iraq will get a direct connection. This project is, therefore, important for Iraq, particularly, in connecting this country with the Mediterranean ports.

It is expected that the question of entrusting the construction work of the line in Iraq to India will also be considered in due course.

EXPORT OF CARBON PAPERS AND TYPEWRITER RIBBONS

India exports a variety of office and stationery items to a large number of overseas markets.

Recently, M/s. Bharat Carbon and Ribbon Manufacturing Company Limited, N-75, Connaught Circus, New Delhi, secured and executed a contract worth Rs. 1 million for the supply of typewriter ribbons and carbon papers from a semi Government body in Iraq. Notably, the contract was bagged by the firm against a global tender, in the face of stiff international competition.

During 1971-72, India's exports of carbon papers amounted to Rs. 1.76 million while the export earning of typewriter ribbons including ink pads was of the order of nearly Rs. 1 million. Iraq, Indonesia, Burma, Kenya, Malaysia, Vietnam Republic and Singapore were the leading destinations for carbon papers while Indonesia, Vietnam Republic, Thailand, Sri Lanka, Kenya, Malaysia, Hong Kong and Ethiopia were the prominent markets for typewriter ribbons.

The export range of office and stationery products from India includes cabinet filling, fitting of file paper clips, fountain pens, pencils, stylograph pen and pencilsincluduing ball pens and pencils and parts therof, pen nibs and nib points, pencil leads, slate pencils, crayon and pastel drawing charcoal. Besides, fountain pen inks and other inks (excluding printing inks), slate and boards with drawing surface, hand operated date sealings and similar stamps, typewriter ribbons and ink pads, sealing wax sticks and cakes, copying paste with gelatin basis, letter pads, exercise book registers, drawing copy books, account book registers, notebooks, diary receipt books, filecovers, albums, carbon papers, duplicating papers (cut to size), other copying papers (cut to size), blotting and filter papers (cut to size), paper rolls and cards for calculating and statistical machinas and other items of paper in the line are exported to overseas destinations.

IGNITION COILS TO THAILAND

Automotive electrical equipment have emerged as promising items in India's export trade in recent years. The country offers for export a wide range of items in the line including motor starters, horns, generators, ignition coils, automobile lighting equipment, complete head lamps and other electric lighting for cycles and motor cycles. During 1971-72, exports of these items amounted to nearly Rs. 0.50 million. U. K., Thailand, Kenya, Burma, Iran, Sweden, Arab Republic of Egypt, Sri Lanka, Netherlands and Afghanistan were the prominent importing countries.

During 1971-72, M/s. Lukas Indian Service Limited, 9, Patullo Road, Madras–2, one of the firms engaged in the manufacture of ignition coils and parts thereof, exported ignition coils and other parts to the tune of Rs. 287,100 to Thailand and Trinidad. It is presently engaged in developing other markets, such as Malaysia, Singapore, African and West Asian countries. The firm has also received enquiries for the supply of ignition coils in large quantities from U. K., Singapore and Poland.

The product range of the Madras firm includes ignition coils in the range of 6 volts and 12 volts (high performance) catering to the needs of cars, motor cycles and scooters. Besides this main item, the firm also manufactures distributor covers and rotar arms. The firm's installed capacity is of the order of 150,000 numbers per annum for ignition coils while its licensed capacity is of the order of of 75000 numbers per annum. During 1972-72, the firm's production of ignition coils amounted to 191,438 numbers as against 145,542 numbers in the preceding year.

The firm is playing a significant role in the field of import substitution also. Components required in the manufacture of ignition coil, namely craft paper (insulation paper), rubber seals, porcelain base, backelite moulded coil top and aluminium top which were formerly being imported, are now being manufacted by the firm indigenously with 100 per cent indigenous materials.

BOOST IN CEMENT EXPORT

India's exports of lime, cement and fabricated building materials brought in foreign exchange to the tune of Rs. 27.93 million in 1971-72, registering an improvement over the export value at Rs. 26 million during the preceding year.

During 1971-72, portland gray cement consituted the main variety of export growth having brought in Rs. 24.84 million, accounting for nearly 90 per cent of the total export value. Quantumwise nearly 193,000 tonnes were supplied abroad. Among the main absorbing countries, Nepal purchased 77,700 tonnes valued at Rs. 11.14 million and topped the list of buyers. Muscat was the next important market which imported 79,950 tonnes worth Rs. 9.98 million, followed by Sri Lanka at Rs. 1.76 million (21,260 tonnes) and Bangladesh at Rs. 1.43 million (6500 tonnes) Besides, hydraulic cement and portland white were the other two varieties of cement supplied mainly to Iran, Muscat and Kenya.

Asbestos cement sheets constituted another category active in export during the year. It fetched Rs. 1.69 million (4300 tonnes). Dubai, Abu Dhabi, Nepal and Malaysia were the prominent purchasing countries. Asbestos cement tiles, asbestos cement pipes and other articles of asbestos cement were the other items in the line, active in exports.

M/s. India Cements Ltd., 175/1, Mount Road, Madras-2, one of the units engaged in the manufacture of Portland Cement and cement clinker stepped up their exports fourfold during 1972-73 to Rs. 13.72 million from only Rs. 3.52 million, in 1971-72. Quantumwise 84,485 tonnes of cement and cement clinker were supplied abroad as against 31,145 tonnes. Bangladesh was the major destination in 1972-73 absorbing the bulk of cement supplies while Maldive Islands and Sri Lanka were the other markets.

The Madras firm's two plants at Shankar Nagar works in Tirunelveli District and the other—Sankari Works in Salem District have installed capacities of 913,000 tonnes and 600,000 tonnes per annum respectively. During 1972-73, the total production of Sankar Nagar Works was of the order of 685,205 tonnes as against 826,108 tonnes in 1971-72 while the production at the Sankari plant was 576,724 tonnes (1972-73) as against 488,805 tonnes (1971-72)

BASIC CHEMICALS ON EXPORT STREAM

About Rs. 321 million worth of chemicals and allied products were exported from India during 1971-72. Medicinal and Pharmaceuticals Products earned Rs. 87 million; dying, tanning and colouring materials Rs. 54.5 million; chemical elements and compounds Rs. 72 million and essentials oils and perfume materials Rs. 86.4 million. The supplies were effected among others to Western and Eastern Europes, Japan and U.S.A.

During 1971-72, some of the manufacturers in the line of basic chemicals and pharmaceuticals group were able to improve their export performance as compared to the year 1970-71. Messrs Smithkline French (I) Ltd. Devanaballi Road, Off Old Madras Road, Bangalore 16, for instance, improved their exports of drugs and pharmaceuticals to Sri Lanka, Nepal and Sikkim to Rs. 432,000 from Rs. 287,000 in 1970-71 Similarly, Messrs Chesborough Pond's Inc; Madras supplied angelface and compact make-up to U.S.S.R. and Italy at Rs. 6.70 million in 1971-72 as against Rs. 1.17 million in the previous year, recording more than five fold increase. Supplies of agarbattis effected

M/s. B. V. Aswathiah Brothers, 183, Nagathpet, ngalore-2 increased to Rs. 1.22 million from Rs. 1 19 lion. The export supplies by the firm were directed Nigeria, Spain, South America, Yemen Arab public, Zambia, Sudan, Ethiopia, Kenya, U.K., S.A., Fiji, Canada, Singapore, Uganda, West rmany, Malaysia, Thailand, Iraq and Japan. other party, Messrs Aravinda Parimala Works, 792, Cross, Ramanoja Road, Mysore-4, manufacturer agarbattis, also succeeded in raising their foreign change earning to Rs. 727,000 from Rs. 500,000. nya, Singapore, Uganda, Fiji, Hong Kong, Japan, S.A., Nigeria, Philippines and Ethiopia were the jor buyers for the products of this company.

Among other manufactures in the line, the public ctor Government Soap Factory at Bangalore, impro- d their export of toilet soaps to Tanzania, Italy, S.A., Singapore, Canada, Spain, Kuwait, Belgium, itzerland and Japan to about Rs. 400,000 from . 330,000 in the previous year. Yet another firm, essrs Amruthanjan Ltd., 14/15 Luz Church Road, adras-4, succeeded in improving exports of products e pain balm, inhaler, gripe mixture and anoleum over Rs. 50,000 to Rs. 436,000 in 1971-72. The pplies were directed to Tanzania, Kuwait, Saudi rabia, Libya, Aden, Kenya, Dubai and Zambia.

XPORT PERFORMANCE AND OTENTIAL

RAN THE BEST BUYER OF NGINEERING PRODUCTS

In the first three quarters of 1972-73 (April- ecember 1972), Iran emerged as the best market for dia's engineering products. It purchased the goods orth Rs. 73.25 million. In the same period of 971-72, its imports in the line from India were of the rder of Rs. 69.72 million. The next best market was e Soviet Union which improved its purchases to e level of Rs. 59.78 million as against Rs. 36.49 illion in the comparable periods. The third best arket was that of U.S.A. and its imports more than oubled from Rs. 26 million to Rs. 58.8 million. The Arab Republic of Egypt, which was the leading purchaser of India's engineering products in the first three quarters of 1971-72 at Rs. 78.93 million reduced its offtake to the level of Rs. 53.98 million in the same period of the subsequent year.

Of the total exports of engineering products valued at Rs. 967.28 million in the first three quarters of 1972-73 as compared to Rs. 917.15 million in the corresponding period of the preceding year, the Asian region absorbed as much as Rs. 432.86 million against Rs. 404.10 million. The South East Asian market absorbed Rs. 191.75 million against Rs. 214.55 million, and the West Asian markets imported worth Rs. 241.12 million against Rs. 189.50 million. Next to Iran, Kuwait was the major importer in the Asian continent and it has improved its purchases from Rs. 30.98 million to Rs. 41.65 million in the period reviewed. Singapore, Sri Lanka, Iraq, Malaysia, Saudi Arabia, Thailand, Muscat, Bangladesh and Indonesia were the other leading importers.

The African continent has imported less of engineering goods from India in the first three quarters of 1972-73 than in the same period of the previous year—Rs. 218.46 million against Rs. 260.97 million. The Arab Republic of Egypt reduced its offtake from Rs. 78.93 million to Rs. 53.98 million. Sudan also purchased less at Rs. 47.40 million against nearly Rs. 50 million. So was in respect of Nigeria (Rs. 37.85 million against Rs. 45.70 million), Zambia (Rs. 8.88 million against Rs. 10.86 million) and Tanzania (Rs. 8.46 million against Rs. 14.22 million). But sizeable improvement was recorded in the offtake of Kenya (Rs. 27.26 million against Rs. 22.78 million) and Libya (Rs. 14.25 million against Rs. 2.40 million).

The East European region has recorded substantial increase in her purchases of India's engineering products in the period under review : Rs. 149.75 million against Rs. 95.34 million. The Soviet Union absorbed Rs. 59.78 million against Rs. 36.49 million. Poland improved its import value several times to the level of Rs. 27.47 million as compared to Rs. 2.4 million. The Czech market has more than doubled its purchases at Rs. 22.8 million against Rs. 10.9 million. There was an increase recorded in respect of Yugoslav imports also at Rs. 23.10 million from Rs. 19.94 million.

The West European imports from India in the line dwindled from Rs. 93.75 million to Rs. 82.80 million.

In the ECM group, the Federal Republic of Germany has been the principal buyer but it has reduced its purchases to Rs. 24.0 million from Rs. 29.2 million. The imports by Belgium imporved marginally but those of France, Netherlands and Italy fell down. The U.K. market also maintained the level of its purchases around Rs. 32.5 million.

In the American region, U.S.A. has improved its engineering products purchases from India under the period reviewed as mentioned above. In fact, the entire American continent increased its purchases to Rs. 61.92 million as compared to Rs. 29.28 million. Besides U.S.A., Canada is an important market. The Latin American countries absorbed Rs. 1.93 million against Rs. 0.93 million. In this group, Peru, Bolivia, Brazil, Surinam and Venezuela were the major buyers of engineering products from India.

In all, the share of specific regions in the total export value of India's engineering goods in the first three quarters of 1972-73 was 45 per cent in respect of Asia (20 per cent for South East Asia and 25 per cent for West Asia); Africa 23 per cent; East Europe 15 per cent; West Europe 9 per cent, America 6 per cent and Australasia 1 per cent.

ALL TIME HIGH IN SEA FOOD EXPORTS

India's exports of marine products during 1972-73 attained an all time record of 38,903 tonnes valued at Rs. 597.20 million. The exports in the previous year were only 35,523 tonnes at a value of Rs. 445.5 million. Thus the rate of growth achieved was 9.5 per cent in terms of quantity and over 34 per cent in value.

Improvement in Frozen Shrimp exports was mainly responsible for this significant increase. Frozen froglegs, canned prawns, sharkfins and fish maws also contributed to the growth. Frozen seafood like frozen shrimp, frozen froglegs, frozen lobster tails and frozen fish put together continued to dominate, sharing 86.4 per cent in terms of quantity and 91.8 per cent in terms of value of the total exports.

Frozen shrimp exports registered a spectacular increase from 24,952 tonnes valued at Rs. 371 million in 1971-72 to 31,038 tonnes valued at Rs. 507.8 million in 1972-73. In the overall exports of marine products, frozen shrimp continued to be the single largest item accounting for about 80 per cent in term of quantity, and about 85 per cent in terms of value. For the second year in succession, Japan continued to be the foremost market for the frozen shrimp. The other principal markets were the U.S.A., Australia, and West European countries like Sweden, Denmark, France, U.K. and Netherlands.

Froglegs exports increased from 1,367 tonnes valued at Rs. 12.80 million in 1971-72 to 2,180 tonnes of the value of Rs. 28.90 million in 1972-73. More than two-thirds of the export was in the direction of U.S.A. France, Belgium, and Netherlands were the other principal markets.

There was a noticeable recovery in the export earning from canned shrimp which suffered a setback in 1971-72. Although the quantity exported improved only marginally, export earnings increased from Rs. 25.20 million in 1971-72 to Rs. 32.50 million in 1972-73. The U.K., France, U.S.A. and Federal Republic of Germany were the leading buyers.

BOOST IN EXPORTS OF WOOL AND WOOLLENS

India's export earning of wool and woollens attained an all time record level of Rs. 480 million during 1972-73, registering an increase of about 34 per cent over that of the previous year at Rs. 358 million.

Carpets, druggets, and numdahs emerged as the major area of export growth during 1972-73, replacing hosiery as the leading export item. This area, in fact, accounted for 44.3 per cent of the total wool and woollen exports. Their export earning was valued at Rs. 212.50 million compared to Rs. 131.8 million in 1971-72. The factors contributing to the rise include among others, the growing trend of preference for natural fibre carpets in Western countries and increase in unit value per metre of woollen carpets. The increased offtake by the leading importing countries also contributed to the spurt. West Germany, for instance, [illegible] doubled its offtake to about Rs. 80 million from a [illegible]

s. 42 million in the previous year (1971-72). The take of U.S.A. was substantially higher at Rs. 54.40 illion against Rs. 35.50 million. U.K., Canada, Nether-nds, and Sweden were the other important buyers hich absorbed worth Rs. 23.79 million, Rs. 12.46 illion, Rs. 7.32 million and Rs. 3.46 million spectively.

Woollen hosiery constituted the next best category ontributing to the export growth. Valued at over s. 168.80 million (1972-73), the export value of hosiery ems improved by Rs. 24 million compared to that t Rs. 144 80 million in the preceding year. U.S.S.R. etained its position as the topmost buyer, having nproved its intake to Rs. 135.30 million from Rs. 117.80 illion. Poland, the second leading destination, multilied its offtake manifold at Rs. 14 million from Rs. 2.65 illion. Czechoslovakia was another important buyer. ts purchases increased to Rs. 9.41 million from Rs. 8.6 illion. Amongst free currency markets, Libya ontributed to lead the list with its purchases valued t Rs. 337.5 million against Rs. 278.70 million. Iungary, Kuwait and Malaysia were the only markets vhere supplies of Indian hosiery items suffered a lecline. Saudi Arabia and Nigeria, however, emerged s new destinations though their purchases were limited o Rs. 390,000 and Rs. 900,000 respectively.

Interestingly, contrary to the consistently declining rend witnessed in export of raw wool over the past ew years, the export value of this primary item rose ppreciably to Rs. 60 million from Rs. 35 million. This represents an increase of 72 per cent. The increase vas attributable to alround increase in raw wool price all over the world. Major gains were noted in respect of Belgium (Rs. 5.5 million against Rs. 2 million) and U.K. (Rs. 38.80 million against Rs 10.1 million). Supplies to U.S.S.R., however, declined to Rs. 14.17 million from Rs. 15.20 million.

The export value of other categories which looked up during 1972-73 compared to the previous year included blankets (Rs. 3.4 million against Rs. 2.23 million) and shawls (Rs. 2 88 million against Rs. 1.19 million). Marginal improvement was also witnessed by shoddy wool, wool tops and worsted yarn knitting wool. Belgium, Kenya, and Muscat were the major destinations contributing to the increase in export value of blankets while Burma and Dubai emerged as new markets for this item. The export earning of shawls was more due to the larger offtake by Saudi Arabia, Bahrein Islands, and Dubai. Yemen Arab Republic emerged as a new market.

Woollen and mixed fabrics and woollen readymade garments were the only two categories which registered a decline in exports in the year. Overseas supplies of fabrics decreased to Rs. 17 million from Rs. 23.55 million. Reduced purchases among others by Hong Kong, Hungary, U.S.S.R., Singapore, Sudan, Denmark, Zambia, Sweden, Norway led to the decline. The export value of readymade garments was less at Rs. 14.58 million as against Rs. 19.38 million, mainly due to curtailed intake by U.S.S.R. and German Federal Republic.

BIG SPURT IN EXPORT OF PRECIOUS STONES

India's export trade in pearls and precious as well as semi-precious stones has witnessed a sizeable improvement in the first three quarters of 1972-73 at Rs. 550.24 million as against Rs. 371.65 million in the same period of 1971-72.

In the period reviewed in 1972-73, the export value of pearls stood at Rs. 8.4 million. The major importers of unworked natural pearls which earned Rs. 4 million were Hong Kong, U.S.A. and Japan. Dubai was the major market for worked natural pearls, next only to U.S.A.

Cut diamonds were, however, the most active on export front. They earned foreign exchange worth Rs. 423.10 million. Belgium, the traditional importer from India, absorbed worth about Rs. 100.95 million (39.74 million kg). The U.S. market was the next best buyer at Rs. 94.8 million (26 million kg). The import value of Hong Kong was Rs. 76.94 million (28 million kg). The value of purchases made by Japan was Rs. 42.14 million while that of Nerherlands and U.K. respectively were Rs. 26.8 million and Rs. 21.6 million, Additionally, the uncut variety of diamonds netted Rs. 18.32 million. The other precious and semi-precious stones were exported to the tune of Rs. 94 million. Here again the major markets were U.S.A., Japan, and Hong Kong. Other importers included Switzerland, France, German Federal Republic and the U.K. The synthetic stones, both cut and uncut were also active on export front and secured Rs. 6.38 million in the period reviewed.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

TELEPHONE INDUSTRY IN INDIA

The progress of India's telephone industry is denoted by that of M/s. Indian Telephone Industries Limited (ITI), Bangalore, which is an important public sector undertaking in the country. The company has improved its stature year after year in terms of production, export trade and import substitution.

ITI has three major divisions at Bangalore, namely, the Telephones and Main Automatic Exchange Division, Crossbar Division and Transmission Division. Apart from its unit at Bangalore, it has an Ancillary Unit in Jammu and Kashmir and a factory at Naini near Allahabad for the manufacture of transmission equipment. The Telephones and Main Automatic Exchange Division produces a wide variety of products including telephones with headgear sets and auto-telex dialling units, uniselector racks, group selector racks, composite racks, meter racks, meter plates, relay sets, test desk panels and cabinet type exchanges. In 1971-72, the actual production of telephones including headgear sets and auto-telex dialling units was of the order of 267,250 numbers. The target for 1972-73 was 286,000 numbers. The Cross Bar Division manufactures selector frames, relay frames, distribution frames, power panels and supervision panels. The Transmission Division manufactures 12 channel equipment multiplex equipment, interstic terminals, VFT channels, terminating equipment bays, matching transformers and loading coils and unicells. The Ancillary unit in Jammu and Kashmir produces 2 way to 5 way cords and fuses of 0.5 to 3 Amps. The factory at Naini mainly manufactures 12 channel groups for transmission equipment.

The company has an active research and development division working towards self-reliance in terms of latest technology and materials. Besides completing the development work of sophisticated multiplex equipment to stringent international specifications, the first integrated circuit equipment and a 24-channel junction carrier system, the ITI has plans to develop, among others, microwave and satellite equipment, error correcting equipment and a family of electronic exchanges.

ITI has an interesting record of exports to its credit. Its export value during 1971-72 was of the order of Rs. 3.21 million. In the subsequent year, the exports totalled Rs. 1.56 million upto October 1972. In the year 1972-73, the company received orders from Australia, East Africa, Greece, Malaysia, Nepal and Singapore for PAXs, PABXs, relays, group selectors, final selectors, unicoil assembly, matching transformers, crossbar telephone exchange equipment and telephone spares.

Recently, ITI has finalised an agreement with the Ministry of Communications in Jordan for the supply and installation of 1000 line automatic telephone exchange. The order which was worth Rs. 2.1 million was secured against keen competition from established manufacturers including U.K. and other advanced countries,

The company lays stress on the aspect of import substitution. It has supplied the necessary know-how to local entrepreneurs for promoting indigenous manufacture of material and components that were presently imported. The recurring foreign exchange savings effected by the company during 1971-72 was of the order of Rs. 3.73 million. The cumulative foreign exchange savings during the last seven years ended 1971-72 amounted to Rs. 41.6 million.

Among the new units of the company are the factory for the manufacture of long distance transmission equipment at Naini, Jammu and Kashmir ancillary unit and the factory for the manufacture of telephones switch equipment at Rae Bareli. The first factory at Naini manufactured 12 channel carrier equipment worth Rs. 16.6 million during 1971-72 and the construction of the second factory at Naini is under progress. The second phase of the expansion programme of the Jammu and Kashmir Ancillary Unit (near Srinagar) has been taken up. The Rae Bareli factory is meant for the manufacture of telephone switch equipment and it is still in the initial stages of construction.

ROGRESS IN TELEPRINTER RODUCTION

Production of teleprinters in India is well estab-hed. Besides meeting domestic demand, the country exporting teleprinters and saving foreign exchange by ay of import substitution. M/s. Hindustan Teleprinters mited, Guindy, Madras is currently manufacturing types of teleprinter machines and attachments. It s manufactured 4780 units of teleprinters during 71-72. Production in the year include 33 units of evanagari Page Model, 102 units of Devanagari Tape odel, 1020 units of Field Version models to the efence, 2105 units of English Page models and 575 its of English Tape Models. The company has target-d to produce 6,000 units of teleprinter machines dur-g the year 1972-73 and has sold 4835 units. While e Posts and Telegraphs Department absorbed about 7 per cent of the company's total sales, its annual sales rnover during 1971-72 was of the order of Rs. 25.80 illion.

The export success achieved by the company is articularly worthy of mention. During 1971-72, it as secured export orders worth Rs. 649,000 from ri Lanka, Nepal, Singapore, Nigeria, Lebanon, ordan, New Zealand and Turkey. It actually exported uring the year equipment worth Rs. 717,000 to arious countries. With a view to expand its export arket, the company participated in number of world xhibitions, including Nigeria, Arab Republic of Egypt, hilippines, Bulgaria. Saudi Arabia and New Zealand.

The company has succeeded in reducing the oreign exchange content of its products to a remark-bly low figure. Presently, the foreign exchange content y value represents less than 2.8 per cent for compo-ents and 2.9 per cent in respect of raw materials or a otal of 5.7 per cent for an average teleprinter machine. The import of raw materials is confined to certain pecial alloy steels, magnetic materials and special steel ections which are not manufactured indigenously.

To provide new facilities in the teleprinter produced n the country, the company has developed a number of new devices that can be incorporated on the machine. Some of the devices are: two types of builtin telex dialling unit, with a facility for connecting a near or long distance telex subscriber to a telex exchange, for working either in single current or double current mode; facility for remote control of tape transmitter and tape perforating attachment; and the facility for sensing the taut tape condition of transmitter attachment.

In the field of product diversification, the company has made good progress towards launching the production of electrical typewriters. A large proportion of the work for the required tooling has been completed by the company and the regular manufacture of this item is expected in the current year itself. The company also proposes to manufacture Stamp Cancelling Machines with indigenous know-how.

PROGRESS OF PUBLIC SECTOR IN PHARMACEUTICALS

Indian industry, engaged in the manufacture of drugs and pharmaceuticals, has made good progress in recent years. For a number of essential drugs, domestic production has gone up. In the year 1972, for instance, sizeable growth has been recorded in the quantum and value of output of items like penicillin, streptomycin base belonging to the group of antibiotics, anti-dysentry drugs, anti-diabetic drugs including tolbutamide, chloropropamide, insulin, anti-leprosy drugs, antipyretics and analgestics, anti–T. B. drugs, antimalarials and vitamins. In the year, many new schemes for setting up capacities for the manufacture of new items as also for expansion of existing capacities have been licensed. These include semi-synthetic penicillin, empty hard gelatine capsules, vitamin C, sodium ascorbate, sorbitol etc.

In the industry's endeavour to improve and diversify the production pattern in the drugs and pharamceuticals lines, the public sector projects in the country have come to play an important role. The Surgical Instruments Plant at Madras went into production in 1965 since when, its production pattern has been witnessing continuous diversification in view of the changed demand position within the country. The plant's production in 1971-72 was of the order of 565,120 numbers of surgical instruments valued at Rs. 4.58 million. It has succeeded in exporting 5,96,536 numbers in the year to fetch Rs. 4.59 million. Even in the first three quarters of 1972-73 (April-December, 1972), the firm's export value was Rs. 5.28 million. The company has drawn up future plans to improve the production of certain instruments such as detachable scalpel blades and handles.

The Synthetic Drugs Plant, Hyderabad, has by the end of 1971-72, completed an expansion programme to raise its production capacity from the original level of 851 tonnes to 1268 tonnes. In 1971-72, the plant's production was of the order of 1,039 tonnes and sales were valued at Rs. 82 million. Expansion of its capacity further to about 2,000 tonnes is in the process of implementation, according to the Annual Report of the Ministry of Petroleum and Chemicals, 1972-73. This plant has also been actively engaged in the research and developmental efforts and has recently developed a new process for the manufacture of acetyl sulphaguanidine as also sulphaguanidine at lesser cost than before.

The Antibiotics Plant at Rishikesh produces a wide range of antibiotics consisting of sodium penicillin, procaine penicillin, streptomycin, tetracycline, oxytetracyline and nystatin. The production in the plant during 1971-72 was of the order of 116760 milliards.

The Hindustan Antibiotics Limited is engaged in the manufacture of penicillin, streptomycin and other antibiotics. Its production of penicillin in 1971-72 was of the order of 66.42 MMU and that of streptomycin was 61806 kg. The company is presently implementing the vitamin C project which is likely to be completed shortly. In full operation it will produce 125 tonnes of this vitamin. The production of sorbitol, the intermediate product, for the above vitamin has also been achieved. It is also going ahead with its plans to establish a 5000 kg. per annum capacity of semi-synthetic penicillin.

SHIP-BUILDING AT COCHIN YARD

The Cochin Shipyard Authorities have recently concluded a formal agreement with Messrs Scott Lithgow Limited of Port Glassgow, Scotland to build big bulk carriers with a capacity of 75,000 DWT. The Panamax bulk carriers to be built in collaboration with the foreign firm will be the largest ships to be constructed in the country so far.

The Agreement will be valid for five years and the Scotland firm will supply design data, drawings and specifications for the bulk carriers, train Indian personnel at their Kingston Shipyard and station their experts at Cochin for providing consultancy in the design and construction of ships at Cochin.

The ships to be built at Cochin will follow the design of Panamax bulk carriers ordered by the Shipping Corporation of India earlier but will be modified to cover the use of indigenous materials and the installation of indigenously available equipment. The Cochin Shipyard will commence fabrication of hull structures in the last quarter of 1974 and lay the keel for the first vessel in the second quarter of 1975. The first ship is expected to be launched in 1976 and to be delivered next year.

ON BHARAT EARTH MOVERS

In the context of modernising India's agrarian economy, M/s. Bharat Earth Movers Limited (BEML), Bangalore, have a vital contribution to make. The manufacturing range of this public sector firm includes a variety of earthmoving equipment that is necessary for the construction of roads, dams and even airstrips. BEML also produces integral railcoaches. Established in 1964, the firm has even within the short span of time, improved its turnover eightfold and already made a mark in export of their products that are reported to be of international comparability.

The production range of the Bangalore firm includes buldozers in the ranges of D 50A-15-90 HP, D 80A-12-180 HP and D 120A-18-250 HP; rubber tyred equipment 'Bharat Haulpok Rear Dumpers' in the range of 25 tonnes, 35 tonnes and 50 tonnes; 'Bharat Motor Graders' (440 motor graders) in 12 Moldboard 115 HP; 'Bharat Scrapper' (285 FHP); front end loaders - 'Bharat Tiger' in the range of Tiger T-120 SK with alternative buckets of 1.5 and 2.3 cubic metres heaped capacity and railcoaches.

The Bangalore firm has to its credit the production 82 numbers of buldozers of 90 HP, over 502 numbers uldozers of 165 HP, over 28 numbers of buldozers 80 HP, over 154 numbers of buldozers of 250 HP, r 64 numbers of buldozers of motor graders of 115 ; over 180 numbers of 'C' tournapull scrappers of and 307 HP, over 243 numbers of Haulpok dumpers 25 tonnes, 35 tonnes and 50 tonnes capacity and r 136 numbers of tractors with 1.3 cubic metres vels and other attachments.

During 1971-72, the total turnover of this organisa- n crossed the Rs. 350 million mark, registering an pressive rise of about 33 per cent over its preceding ar's turnover at Rs. 266 million.

In the field of import substitution too, BEML has en active in developing indigenous parts and nponents to be used in the manufacture of its oducts. Today, only a small percentage of compo- nts is being imported by it. In the manufacture of lcoaches, almost cent per cent indigenous material used by them.

XTERNAL ASSISTANCE IN 1972-73

External assistance for which agreements were gned by India during 1972-73 amounted to Rs. 6770 illion (US $ 928.88 million). Of this, project aid counted for Rs. 2720 million ($ 373.41 million) and on-project aid for about Rs. 2870 million ($ 393.8 illion) Assistance in the form of debt relief amounted Rs. 1180 million ($ 161.67 million). IDA offered 199 million in project aid and $ 75 million in non- roject aid.

Agreements for non-project aid amounting to s. 2870 million were concluded during the last nancial year with Austria ($ 0.5 million), Belgium 3.33 million), Canada ($ 64 million), Denmark ($ 5.7 illion), France ($ 25 million), West Germany ($ 27.96 illion), Japan ($ 33.2 million), Netherlands ($ 19 illion), Sweden ($ 53.01 million) and U.K. ($ 87.1 illion).

Country-wise, project aid included Canada ($ 25.39 illion), France ($ 59.2 million), West Germany ($ 15.53 million). Japan ($ 9.74 million), Sweden ($ 10.6 million), U.K. ($ 41.6 million) and U.S.A. ($ 12.35 million).

Debt relief amounting to $ 161.67 million was given by Austria ($ 2 4 million), Belgium ($ 1 67 million), Canada ($ 1.99 million), Denmark ($ 0.14 million), France ($ 6.65 million), West Germany ($ 43.47 million), Italy ($ 13.94 million), Japan ($ 38 23 million), Netherlands ($ 2.73 million), Sweden ($ 0.51 million), U.K. ($ 20.8 million) and U.S.A. ($ 29.14 million).

ECONOMIC AID TO CO-DEVELOPING COUNTRIES

India has agreed to give a credit of Rs. 32.10 million to Mauritius under an agreement signed between the two Governments in September last. This credit is to be utilised for the procurement of Indian goods and services required for an irrigation project, live-stock feed factory, telephone and telex services and industrial estates.

Another agreement was signed between the Governments of Tanzania and India in December last for India's providing a credit of Rs. 50 million to that country. This credit would be available for the purchase of machinery from India to set up projects in the fields of power, industrial estates and small scale industries and such other fields as would be mutually agreed to, according to the Annual Report of the Ministry of Finance for the year 1972-73. It will also be available for the provision of expert services from India.

India continues to provide technical assistance to other member countries under the Colombo Plan and Special Commonwealth African Assistance Plan. Services of Indian experts are made available and training facilities for foreign nationals. The expenditure under these schemes during 1972-73 was estimated at Rs. 7.2 million.

Towards Commonwealth Fund for Technical Co-operation, the Indian contribution is of the order of Rs. 285,000 per annum. It was agreed that India would contribute towards this Fund an additional Rs. 660,000 during the year 1972-73.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

COPPER TUBING SUBSTITUTED IN TRANSFORMERS

The State-owned Heavy Electricals factory at Bhopal has for the first time in India, successfully designed and manufactured a 132 kV current Transformer using aluminium tubing in place of copper tubing hitherto being used. The manufacture of these transformers with aluminium tubing will help save Rs. 0.4 million worth foreign exchange to the country every year, besides conserving the scarce copper.

The Indian engineers of the Bhopal factory successfully overcome a number of design problems encountered in the use of aluminium in place of copper in the Transformer. The transformer has passed all routine and type tests including the short circuit test thereby proving the short circuit capability of the equipment.

The Current Transformers are used for protection of electrical equipment and measurement of current in the power systems.

ISOTOPES FOR DIAGNOSTIC APPLICATIONS DEVELOPED

The Isotopes Division of the Bhabha Atomic Research Centre, Trombay has developed a simple technetium - 99m 'COW'. One of the most widely used isotopes, this variety has a half-life of only six hours and accounts for nearly 30 per cent of all diagnostic applications of radioisotopes in advanced countries.

Technetium-99m can be separated in a pure form from its parent molybdenum-99 (half-life 67 hours) which is readily produced in a nuclear reactor. The pure technetium 99m thus separated can be straightway supplied to hospitals, but since its half-life is very short, the isotope can be made available only to hospitals located near the production centres.

The isotope is hence usually supplied to hospitals in the form of a 'generator' or 'cow' which is a device wherein the parent isotope of technetium - 99m, namely molybdenum - 99, is retained. The 'cow' can be 'milked' at the hospitals using chemical procedures to obtain pure technetium-99m just before use.

After some time, more technetium-99m builds up in the generator due to decay of molybdenum-99m and this can again be milked out. This operation can be repeated several times. The generator thus ensures a ready supply of this short lived isotope in hospitals located away from the production centre.

The Trombay-developed technetium 'cow' differs from the technetium 'cows' in use in many advanced countries. The latter use molybdenum-99 of high specific activity which can be produced either from enriched molybdenum-98, or in high flux reactors and is consequently expensive. The Trombay 'cow' uses low specific activity molybdenum-99 which can be readily produced in large quantities in any research reactor.

The pertechnetate milked out from this 'cow' is of high purity and concentration, and is quite suitable for preparing labelled products.

Such 'cows' have been supplied to six leading hospitals in the country. Indigenous production and supply of these 'cows' will make possible several improved diagnostic procedures in nuclear medicine in India, with considerably reduced radiation dose to the patient.

POWER SUPPLY UNITS FOR MICROWAVE SYSTEMS

The National Physical Laboratory, New Delhi, has recently developed the Universal Klystron power supply and modulation unit which are used to operate reflex klystrons in microwave test benches and other microwave systems. Reflex klystrons are used as signal sources in microwave systems, sub-systems and in microwave test benches for research and education.

These klystrons are operated with a klystron power supply with a highly established beam voltage and repeller voltages. The beam voltages are positives with pect to the cathode and the repeller voltage is gative with respect to the cathode.

The universal power supply developed for operat- g most of the klystrons from L-band to K-band, give ghly established voltages for beam as well as repeller. has facilities for supplying 6.3 volts a.c. for filaments the klystrons. The beam voltages and the repeller ltages are continuously variable.

The modulation unit is a pattern generator with cilities for square wave, saw-tooth, sine and pulse tput. When used with the above klystron power pply, it will modulate the klystron as required. esides this, this unit can be used as a function gene- tor for pulse, square wave, saw-tooth and sine wave, eful for other electronics applications.

Specifications of the Universal Klystron Power upply are : Beam voltage 200 to 2000 volts or 200 to 000 volts; repeller voltage 0 to 600 volts (the repeller oltage is constant when the main voltage is changed om 180 to 240 volts). The beam voltage between 200 2000 is constant when the main voltage is changed rom 210 to 240 volts and Beam current : 0 to 100 mA. acilities are provided for external modulation Unit to e connected to this power supply.

Specifications of the modulation unit are : square odulation : frequency (400 c/s to 2 kc/s) and mplitude (0 to 150 volts). Pulse Modulation : requency (400 c/s to 2 kc/s) and amplitude (0 to 150 olts). Saw tooth Modulation : frequency (5 to 150 /s) and amplitude (0 to 150 volts). Sine wave modula- ion : frequency (30 c/s) and amplitude (0 to 125 olts).

At present, these items are not known to be produc- d in the country and the present demand, estimated t 30 to 50 units of each per year is being met by n.ports.

Variac, transformers, valves and semi-conductors, oltage and current meters, chassis and other mechani- al accessories and a few more miscellaneous items of aw materials required are all indigenously available nd do not require any import.

Any well established electronic instruments manu- acturing organization having drill machine, fitting shop, voltage and current measuring equipment, oscilloscope upto 15 MHZ etc. can take up this project without any additional capital investment.

SILVER AND CELLULOSIC BASE FROM WASTE PHOTO FILMS

Photo films contain silver, gelatin and a Cellulosic base. These go unrecovered, when waste photo films are discarded.

By a simple and inexpensive process developed by Regional Research Laboratory, Jorhat, all the above materials can be recovered and sold. It is claimed that 99.9 per cent pure silver, glue grade gelatin and pure cellulosic base are obtained by this process.

For an economic size unit to process 50 kg of waste film per year (3 shifts, 300 days), the area required is A 20 feet x 30 feet shed.

The main raw materials required in the process are waste photo films, potassium aluminium sulpate, filter cloth etc. All these are easily available indigenously. Major items of equipment required are M.S. water tank, porcelain vessels and evaporators. Coal fired oven, silver melter, buckner filter, heater and film cutter.

RECOVERY OF VALUABLE MATERIALS FROM WASTE DRY CELLS

Dry battery cells are normally thrown away after use. Thus, valuable materials like Metallic zinc, carbon electrodes, Manganese dioxide/Acetylene black mixture go unrecovered. The Regional Research Laboratory, Jorhat, has developed simple and inexpensive process by which these valuable materials can be recovered and re-used as raw materials for making dry cells or for some other purposes.

The tools and equipment required in the process are simple. The main raw material, namely, nitric acid required is easily available indigenously.

INDIA'S EXPORT TRADE

A REVIEW

India's export earnings in the first three-quarters of 1972-73 (excluding substantial exports to Bangladesh) totalled Rs. 13903.48 million as compared to Rs. 11365.73 million in the corresponding period of 1971-72.

In the Food and Live Animals group, whose exports revealed progress at Rs. 3537 million against Rs. 3127 million, the offtake of meat and meat preparations doubled to about Rs. 22 million from Rs. 10.5 million. Fish and fish preparations earned Rs. 400 million against Rs. 282 million. Cereals and cereal preparations also witnessed uptrend from Rs. 48 million to Rs. 277 million. Such a spurt was possible due to a heavy outgo of wheat, which earned Rs. 224 million as against hardly Rs. 0.6 million in the comparable periods. Fruits and vegetables was another line of export growth having netted Rs. 658.9 million against Rs. 581 million. Fresh fruits and nuts including cashew nuts secured Rs. 595 million against Rs. 528 million. Owing to the rise in domestic demand, sugar exports dwindled to Rs. 102 million and odd from Rs. 276 million. Coffee exports brightened to earn Rs. 227 million as compared to Rs. 190 million. Tea and mate also ravealed uptrend to Rs. 1201.7 million from Rs. 1167 million. The export earning of spices, however, declined to the level of Rs. 176.6 million from Rs. 231.3 million. Another line of export expansion related to feeding stuff for animals. This item secured Rs. 442 million as compared to Rs. 318 million. Tobacco and tobacco manufactures was yet another line of export dynamism, having netted Rs. 529 million against Rs. 370 million; un-manufactured tobacco was exported to the tune of Rs. 502 million against Rs. 350 million while tobacco manufactures also witnessed a marginal improvement to Rs. 25 million against Rs. 20 million.

In the inedible crude materials group, the export trade in wood, lumber and cork fetched more at Rs. 82 million as compared to Rs. 56 million. Textile fibres and their waste were also active on export front and they earned Rs. 295.5 million against Rs. 202.4 million. Of these fibres, cotton earned Rs. 200 million against Rs. 142 million, wool and other animal hair Rs. 45 million against Rs. 32 million and jute Rs. 39.5 million against Rs. 20 million, silk Rs. 5 million against Rs. 3.3 million. Metaliferrous ores and metal scrap also witnessed export expansion. They were supplied abroad to the level of Rs. 916 million against Rs. 842 million. Export value of iron ore and concentrates was nearly Rs. 800 million as compared to Rs. 714 million. The ores and concentrates of non-ferrous base metals almost maintained their export level of Rs. 108 million.

The group of petroleum and petroleum products also revealed signs of export growth. Petroleum products were exported to the tune of Rs. 82.6 million as compared to Rs. 52.5 million. There was a noticeable improvement in the export trade of vegetable oils and fats. Their export value jumped upto Rs 152 million from hardly Rs. 38 million in the comparable years.

Among the non-traditional items of export, the group of chemicals was indeed active. This group earned foreign exchange worth Rs. 298 million as against Rs. 242 million. Chemical elements and compounds secured Rs. 63 million against Rs. 52 million, dyeing and tanning extracts Rs. 75 million against Rs. 39 million; essential oils and perfume materials Rs. 74 million against Rs. 65 million and plastic materials Rs. 6 million against Rs. 4.8 million. The only item which did not show improvement in exports was in respect of medicinal and pharmaceutical products whose export earning was Rs. 68.9 million against Rs. 70.5 million.

The export trade in leather and leather manufactures registered a sharp improvement from Rs. 642 million to Rs. 1148 million, paper and paper board also improved to fetch Rs. 32 million against Rs. 24.5 million.

The textile group has also improved upon its export performance in the period under review. The group earned Rs. 3425 million against Rs. 3003 million. Textile yarn and thread earned Rs. 278 million against Rs. 191 million, cotton manufactures including yarn and thread Rs. 914 million against Rs. 698 million, jute manufactures excluding twist yarn Rs. 190 million against Rs. 1855 million and floor covering and tapestries Rs. 195.6 million against Rs. 144 million.

Among the non-metallic mineral manufactures, pearls and precious stones proved to be particularly active on export front where export value rose to

. 550 million from Rs. 372 million. Glass and ssware also improved to fetch Rs. 20.3 million ainst Rs. 12.8 million.

The iron and steel products exports have been nsciously restricted owing to the spurt in domestic mand. Nevertheless their exports totalled Rs. 298 llion against Rs. 310 million in the comparable riods. The export improvement was marked in pect of pig iron and sponge iron, steel tubes and es and steel ingots and other primary forms. The n and steel bars and rods registered a marginal cline. So was the case of rails and railway ck materials. The non-ferrous metals group also vealed export growth—Rs. 66 million against Rs. 58 illion, specific products of export were aluminium d copper. Among the metal manufactures, machine d hand tools improved upon their export performance om Rs. 42.3 million to Rs. 58.4 million. Finished ructurals parts and structures also fetched more. ousehold of base metals, cultery, metal containers, r storage and transport also registered export tterment.

In the machinery and transport equipment sector, on-electrical machinery secured Rs. 225.5 million gainst Rs. 185.6 million. Of these, power generating achinery was particularly active having imports s exports to Rs. 74 million from Rs. 41 million. lectrical machinery and apparatus and appliances hich is a consistent line of export expansion over the st few years fetched Rs. 183 million against Rs. 146 illion. The specific lines of export growth were elec- ical power machinery and switchgear, equipment for istributing electricity, demestic electric equipment and ther electrical machinery and apparatus. Transport quipment too registered some improvement to Rs. 209 illion from Rs. 193 million. The export of railway ehicles declined to Rs. 28.5 million from Rs. 56 million. here was rise in the export of road motor vehicles to s. 98 million from Rs. 79 million, road vehicles other an motor vehicles to Rs. 81 million from Rs. 56.5 illion.

The export of scientific and controlling instruments, ose to Rs. 23 million from Rs. 12 million. The off- ake of developed cinematographic films, however, did ot improve—Rs. 39.5 million from Rs. 40 million.

Directionwise, the African continent absorbed s. 784 million worth of Indian goods in the first three quarters of 1972-73 as against Rs. 896 million worth in the comparable period of 1971-72. The Arab Republic of Egypt continued to be the main market in Africa, in fact, it has improved its intake to the level of Rs. 216 million against Rs. 141 million. Among other African markets that have imported from India in the comparable periods were Dahomey Republic, Ethiopia, Kenya, Lesotho, Liberia, Libya, Malawi, Mauritius, Sierra Leone, Somalia, Tangier, Tunisia and Zambia.

Indian goods were recorded to have gone into the direction of U.S.A. to fetch Rs. 2076.4 million against Rs. 1912.4 million. The Canadian market, however, absorbed less at Rs. 221 million against Rs. 316 million. Latin American region imported worth only Rs. 35 million against Rs. 92 million while the other American countries purchased worth Rs. 17 million against Rs. 24 million.

The ECAFE region bought worth Rs. 3491 million against Rs. 2847 million. The Japanese purchases were higher at Rs. 1546.6 million against Rs. 1321.4 million. Next in importance was Bangladesh but the details of her offtake are not available. In the first three quarters of 1972-73, however, the indicative level of exports to Bangladesh from India were of the order of Rs. 590 million. Indian supplies to Nepal improved to Rs. 252.7 million against Rs. 194 million in the comparable periods. The Iranian market also increased its purchases from India at Rs. 204 million against Rs. 145 million. Australia is another important market in the ECAFE group of countries but its intake decreased from Rs. 200 million to Rs. 189 million. Sri Lanka's purchases also fell from Rs. 172 million to Rs. 68 million. Imports by Hong Kong, however, went up to Rs. 140 million from Rs. 120 million. Among the other ECAFE markets that improved their purchases from India in the comparable periods were Indonesia, Philippines, and Thailand. The non-ECAFE Asian countries including Dubai, Bahrein Islands, Iraq, Kuwait, and Saudi Arabia absorbed Rs. 583 million worth of Indian goods in the first three quarters of 1972-73 as against Rs. 450 million worth in the same period of 1971-72. Of these, the Saudi Arabian market imported worth Rs. 100 million against Rs. 74 million, Kuwait Rs. 120 million against Rs. 75 million, Iraq Rs. 86 million against Rs. 82 million and Dubai Rs. 56 million against Rs. 35 million.

The East European countries revealed sizeable trade expansion in the context of India's export trade

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in the period under review—Rs. 3426.3 million against Rs. 2509.3 million. The Soviet Union purchased worth Rs. 2268.5 million against Rs. 1585.3 million. Bulgaria, Czechoslovakia, Poland and Rumania were the other markets that absorbed more in the comparable periods.

The European Common Market (excluding U.K.) also imported more from India—Rs. 1533 million against Rs. 848 million. The improvement was in respect of the most of the ECM countries. Belgium, for instance, imported worth Rs. 191 million against Rs. 160 million, France Rs. 315.5 million against Rs. 163 millio Federal Republic of Germany Rs. 443 million agains Rs. 263 million, Italy Rs. 345 million against Rs. 16 million and Netherlands Rs. 239 million against Rs. 9 million.

The European Free Trade Area countries purchase worth Rs. 1580 million against Rs. 1373 million. Th export value to U.K. rose to the level of Rs. 135 million against Rs. 1234 million. Sweden, Denmark Norway, Switzerland and Austria—all improved thei offtake. ☐

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DIA WINS POWER CONTRACTS

India has recently won four contracts at a value of . 4.5 million for the Phnom Penh Transmission Project Cambodia being financed through a loan from Asian Development Bank. The contracts have en awarded to the Indian Consortium for Power ojects Private Limited, 36, Janpath, New Delhi-1, the supply and installation of high voltage switchar and connections, 15 K.V. cables and telephone bles, 15 K.V. general switchgear and relay protection ntrol boards and auxiliaries.

This consignment of orders is the sixth secured by the nsortium which is operating under the aegis of the inistry of Heavy Industry, Government of India. ne Consortium consists of M/s. Bharat Heavy ectricals, M/s. Heavy Electricals, M/s. Instrumentan, Mining and Allied Machinery Corporation d M/s. Triveni Structurals Ltd. This order comprises -ordinated supply of 110 K.V. circuit breakers to be anufactured by M/s. Bharat Heavy Electricals; conol panels by M/s. English Electric Company; power d control cables by M/s. Indian Cable Company and current transformers by M/s. Transformers and Electricals Ltd. (Kerala), Angamally, Ernakulam. This is stated to be one of the large orders secured by India from the Asian Development Bank aided projects.

With this, the total value of export orders won by the Indian Consortium of Power Projects crosses Rs. 15 million mark. The Consortium has been rapidly building its foreign exchange earnings for the past three years. Its exports during 1971-72 amounted to Rs. 750,000 and during 1972-73 Rs. 4.35 million. It is expected that during 1973-74 the export value will touch Rs. 10 million mark. It will constitute a substantial proportion of India's total exports in the category of power machinery and distribution equipment.

The Cambodian order is the first sizeable to come to India since the setting up of a Special Cell in 1972, for promotion of export to projects financed by the Asian Development Bank. This cell has been engaged in disseminating information about export opportunities in ADB financed projects, and also keeps track of bids submitted by Indian parties and functions as a focal point for any procedural assistance that may be required by successful Indian bidders for the execution of their contracts.

TOBACCO EXPORTS UP

Registering an increase of nearly 50 per cent during 1972-73 over the export earning during 1971-72, India's tobacco exports reached a level of Rs. 631.37 million. In the preceding year (1971-72), the exports amounted to Rs. 422.46 million. Quantumwise, 92,455 tonnes were supplied abroad as against 57,290 tonnes.

A large number of firms engaged in the exports of unmanufactured tobacco are constantly contributing to the export boost. For instance, M/s. India Leaf Tobacco Developing Company Limited, Guntur, Andhra Pradesh were able to supply 11063 tonnes of unmanufactured tobacco, valued at Rs. 117.61 million during 1971-72 to a large number of countries including U.K., Malaysia, Singapore, Japan, Netherlands, Cyprus, Belgium, Hong Kong, Federal Republic of Germany and U.S.S.R. as well as African markets.

M/s. Navabharat Enterprises, Guntur, another established firm in tobacco exports has exported to the tune of Rs. 70.62 million during the same year. Quantumwise, they were able to supply 8696 tonnes mainly to U. S. S. R., U. K., German Democratic Republic and Czechoslovakia.

M/s. General Trading Company, Guntur, M/s. National Tobacco Company, Guntur and M/s. British India Tobacco Corporation, Guntur exported worth Rs. 38 55 million, Rs. 25.90 million and Rs. 16.05 million respectively during the year. In terms of quantity, they supplied 4850 tonnes, 3220 tonnes and 2174 tonnes respectively. Destination-wise, U.S.S.R., constituted the leading buyer of M/s. General Trading Company while Japan, U.K., Sweden, Netherlands, France and Senegal were the prominent purchasers of M/s. National Tobacco Company of India Limited, Guntur and U.K., Japan, Belgium, France, Ireland, Netherlands, Australia and Senegal were the main customers of M/s. British India Tobacco Corporation.

MEDICINES ON EXPORT STREAM

India's pharmaceutical industry has come of age. Capable of manufacturing a wide variety of drugs and medicines, the industry has emerged as a dependable source of supply to developing as well as developed countries of the world. The industry's medicinal pharmaceutical exports during 1971-72 amounted to Rs. 87 million, registering an improvement over the export performance in the line during 1970-71.

In the comprehensive list of buyers of Indian medicines and drugs during 1971-72, U.K., Kenya, Thailand, Sri Lanka, Australia, Japan, Brazil, Mexico, Nepal, Nigeria, Arab Republic of Egypt, Switzerland, U. S. A., Federal Republic of Germany, German Democratic Republic, Iraq, Iran, Kuwait, Malaysia, Mauritius, Czechoslovakia and Singapore were prominent.

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Adding to the export endeavour of the drugs and rmaceuticals manufacturing sector, M/s. Bayer ia) Limited, Kolshet Road, Thana, Bombay expor- pharmaceutical preparations to the tune of 750,000 in 1972. Besides, the Bombay firm supplied nulations as well as basic drugs to Sri Lanka, onesia, Thailand, Singapore, Malaysia, Turkey and gladesh during the year.

Additionally, the firm was able to step up its orts of rubber chemicals from modest beginnings .s. 1.31 million during the year under review. The 's sales of pesticides too improved sizeably and it now active expansion programme for basic produc- of pesticides. Taking into consideration the wing demand for rubber chemicals, it is also plan- g to expand capacities for the manufacture of these micals including intermediates. During the year er review, the firm's sales of chloroquine phosphate other basic drugs improved considerably. To cope with the growing demand at home and abroad for oroquine phosphate in recent years, the firm has ted expansion of its existing plant. It has received tter of intent in 1970 for the manufacture of toluene socyanate, the basic material required for the duction of polyurethane foam.

TEEL PIPES TO ETHIOPIA

Among the tenders invited by Addis Ababa Water l Sewerage Authority for the supply of steel pipes, t of M/s. Ethiopian Building Supplies and Technical are Company of Addis Ababa is reported to have en selected and the suppliers to this firm are India's s. Bharat Steel Tubes, New Delhi. The tender alued at about £ 35,860, according to the information received from the Indian Embassy in Ethiopia.

India is not only self-sufficient in the production of el pipes and tubes, but has adequate capacity to re for export. Presently, there are 14 units in the ganized sector manufacturing these products. Their nual capacity is of the order of 47146 tonnes (1970). addition, the country has a capacity to produce mless steel tubes at about 39600 tonnes per annum.

The steel pipes and tubes industry in India has tered international markets only recently. The export earning from these products totalled Rs. 106.60 million in 1971-72. In the first three quarters of 1972-73, the export value was in the neighbourhood of Rs. 90 million.

Already Indian manufacturers have successfully participated in several global tenders for overseas supply of tubes and pipes and proved that they can supply them at international standards and specifications. India's steel tubes and pipes have already been exported to various markets including U.S.A. and other developed European markets.

EXPORT SUCCESS OF A CALCUTTA FIRM

The story of M/s. Union Carbide India Limited, Calcutta reveals a consistent endeavour towards progressive product diversification resulting in steady increase in exports. The firm has earned foreign exchange worth Rs. 14.9 million during 1972.

The diversified product range of the Calcutta firm includes several types of batteries and dry cells for radio and telecommunication purposes, processed and rolled zinc, 'Eveready' flashlight cases, cinema arc carbons and midget electrodes, industrial chemicals, polyethylene resins and converted products. Lately, the firm also entered into commercial fishing and export of marine products.

During the year under review, the firm produced 345.6 million pieces of batteries, 7.4 million pieces of flashlight cases, 7.4 million pairs of arc carbons and 0.5 million pieces of industrial carbon electrodes and shapes. Its production of photo engravers plates/strips for printing was 600 tonnes while that of chemicals was 11163 tonnes. In the same year, its production of polyethylene, pesticides formulation and shrimps was of the order of 18540 tonnes, 1115 tonnes and 204 tonnes respectively.

The firm's battery plants are located at Calcutta, Madras and Hyderabad; zinc rolling mill at Alipore, Calcutta; flashlight cases plant at Lucknow; cinema arc carbon and midget electrodes plant at Calcutta and chemical plant at Trombay, near Bombay. Besides it has a naphtha cracking plant.

In the organised sector, during 1972, as against the installed capacity of 1.28 million numbers of stroage batteries of 7 units engaged in the line, their actual production was of the order of 1.1 million numbers. In the same year, the installed capacity of 539 million numbers of dry cells was spread over among 7 units and their actual production was recorded at 619 5 million numbers.

ELECTRICAL CABLES AND WIRES EARN MORE

Categorised as an important industry in the priority sector, India's cables and wires industry has carved a significant place in the broad spectrum of engineering industries in India. Alongside the progress in production, the industry is making notable strides in the field of exports too. For instance, during 1971-72, the exports of the industry amounted to Rs. 103.70 million, according to the Engineering Export Promotion Council, Calcutta. During the first three quarters of 1972-73 (April-December 1972), the exports were of the order of Rs. 93.62 million as against Rs. 80.15 million during the corresponding period of the preceding year.

During 1971-72, among the varieties of wires and cables that were active on the export front, insulated wire cables constituted the foremost variety which alone secured Rs. 50.76 million, sharing nearly 50 per cent of the entire export value. In the preceding year (1970-71), the variety fetched only Rs. 27 million. During 1971-72, U.S.S.R. was the leading buyer of this variety which alone imported worth Rs. 17.95 million, accounting for more than one thirds of the export value earned by this variety. Next to U.S.S.R., Singapore stood as the second biggest buyer having absorbed worth Rs. 10.75 million, followed by Kuwait at Rs. 5.67 million. Among the other buyers, Malaysia, Iran, Sudan, Qatar, Arab Republic of Egypt and German Democratic Republic were prominent.

Occupying the second best position, next to insulated wire cables in terms of value, bare copper conductors fetched Rs. 33.66 million, accounting for nearly one third of the total value earned during the year. Importing as much as worth Rs. 26.71 million, Iran emerged as the topmost buyer of this variety, followed by Singapore, Qatar, Sri Lanka, New Zealand, Jordan, Kuwait and Hong Kong.

Bare aluminium conductors, yet one more important variety active on the export front brought in Rs. 18 88 million. U.S.S.R. with an intake valued at Rs. 7 68 million again topped the list of buying countries. Iran, the next important destination purchased worth Rs. 3.03 million, followed by Singapore, Yugoslavia and German Democratic Republic.

In addition to these main categories, copper winding wire was another variety active in exports during the year. Among the purchasers of this variety, New Zealand, Singapore and Hong Kong were prominent.

In the long list of firms in the line which contributed to the export endeavour of the wires and cables industry during 1971-72, M/s. Premier Cable Company Limited, Ernakulam, Kerala, one of the prominent manufacturers and exporters of electrical cables and wires in the Southern region, earned foreign exchange to the tune of Rs. 3.69 million during 1971-72. Interestingly, the Ernakulam firm was able to increase its exports threefold since 1970-71, during which year the export turnover was Rs. 1.28 million.

The wires and cables industry manufactures complete range including ACC/ACSR conductors, winding wires, PILC power cables, underground telephone cables, PVC/VIR cables, switchboard cables for telephones and bare copper conductors.

During 1972, as against the installed capacity of 961.23 million cubic yards for VIR/PVC cables, the actual output of the 27 units in the organised sector was of the order of 625.20 million cubic yards. During the same year, the installed capacity of 106,850 tonnes for ACSR and AAC conductors was spread over among 40 units and their actual production was 86000 tonnes. The figures of installed capacity, actual production and the number of units engaged in the production of other categories of cables and wires in 1972 were : 18315 tonnes, 14000 tonnes and 26 numbers in respect of enamelled winding wire; 10580 tonnes, 6500 tonnes and 18 units for paper covered winding wire; [illegible] kilometres, 2500 kilometres and 1 unit in dry core cables and 4250 kilometres, 500 kilometres and 1 unit in coaxial cables.

XPORT PERFORMANCE AND OTENTIAL

HANGING PATTERN OF INDIA'S XPORT TRADE

The significance of export promotion in the context the national endeavour towards self-reliance has spired the leaders and planners in India to draw a etailed framework of export policy. Since independence, r reaching changes have taken place in the country's port trade. The colonial pattern of foreign trade onsiting of mostly exporting agricultural products and dustrial raw materials and importing finished goods as been done away with. A new pattern of economic nd trade relations with a large number of countries ith which no meaningful trade existed in the past has merged. Consequently, the relative importance of me traditional markets has declined and new arkets have taken their place. The East European ountries have become sizeable trading partners. Indian xports to the U.S.A. and Japan have recorded nprecedented increases. Bangladesh has now joined ndia in a growing trading partnership with the rest f the world. "In this connection, it would be apposite stress the necessity of forging closer links between eveloping countries, which have a basic complementaity of interests", stated India's Commerce Minister, rof. D.P. Chattopadhyaya, while delivering the annual onvocation speech at the Indian Institute of Foreign rade, (New Delhi) recently.

Referring to the important developments that have ccured in the composition of products, the Minister tated "today we are in a position to offer to the world narkets large and varied range of goods that was ndreamt of even a decade ago. A wide range of ngineering goods, iron and steel products, chemicals nd allied products, footwear and leather goods, fruits nd vegetables, marine products, handicrafts, handooms and a host of various other product lines are noving fairly well in world markets. Our non-tradiional exports are fast outpacing the traditional goods."

Several policy and administrative measures and various kinds of incentive schemes have been introduced in order to reduce constraints on export production and supplies. These policy and administrative measures are under constant review by the Government in order to keep pace with the growing and changing needs of the exporting community. But export promotion unrelated to production planning would be an exercise in abstraction. "Productivity, production and export promotion - this triple nexus needs to be strengthened and interlinked if any significant change or improvement is to be contemplated in the direction, quantum and quality of our exports."

While constant market research is essential, professionalisation of export management is the need of the day. Denying the oft-made point that Indian goods suffer in foreign markets due to lack of distinctive brand image, the Minister stated "our handicrafts, handlooms, cotton textiles, tea, etc. do not suffer from this handicap. Even in respect of engineering goods and consumer items, our fans and sewing machines are held in high esteem for their quality and functional efficiency in many world markets. Our tea and raw silk are world favourites." Product quality, however, is to be viewed and judged in the light of its use-value. The problem, therefore, is whether the potential customers abroad know and believe it to be so, stated the Minister.

Congratulating the Indian Institute of Foreign Trade for rendering valuable service to the export cause through its Executive Training Courses specially designed for export management personnel, the Minister said that the Institute's Diploma Programme in International Trade is the only programme of its kind in India - perhaps in the entire developing world. Several participants from developing countries took part in the Diploma Programmes; this year there is one each from Nepal and Malawi.

ELECTRICAL MACHINERY EXPORTS UP

India-manufactured electrical machinery, apparatus and applicances have come to enjoy wide popularity in world markets in recent years. The exports in the line witnessed consistent uptrend from year to year - Rs. 132.80 million in 1968-69, Rs. 145.53 million in 1969-70, Rs. 160.81 million in 1970-71 and Rs. 186.74 million in 1971-72. In the first three quarters of 1972-73 (April-December 1972), the export value was as much as Rs. 182.70 million as against Rs. 146.20 million in the similar period of the preceding year.

During April-December, 1972, the equipment for distributing electricity constituted the major area of export earning having netted Rs. 56 million as against Rs. 44.30 million in the comparable period of the previous year. Electrical power machinery and switchgears, the next important category recorded a sizeable uptrend at Rs. 41.24 million as compared to Rs. 36.21 million while domestic electric equipment looked up at Rs. 21.47 million against Rs. 13.13 million. The export earning of other electrical machinery and apparatus also increased considerably to nearly Rs. 41 million as against Rs. 29 million. A marginal decline was recorded in two categories namely, telecommunication equipment (Rs. 22.49 million against Rs. 22.93 million) and electric apparatus for medical purposes and radiological apparatus (Rs. 0.50 million against Rs. 0.62 million).

U.S.S.R., Kuwait, Singapore, Qatar, Iraq, Iran, Nigeria, Sri Lanka, Dubai, Thailand, Bulgaria and Sudan were the leading destinations for equipment for distributing electricity while Malaysia, Sri Lanka, Federal Republic of Germany, Tanzania Republic, Nepal, Bangladesh, Nigeria, Kuwait and Thailand were the prominent markets for electrical power machinery and switchgears. Domestic electric equipment was mainly absorbed by Iraq, Kuwait, Poland, Nigeria, U.S.S.R., Australia, Sudan, Yemen Arab Republic, Bangladesh and Saudi Arabia while for other electrical machinery and apparatus Nepal, U.S.S.R., U.S.A., U.K., Iraq, Thailand, A.R.E. and Singapore were the main markets.

GLASS AND GLASSWARE EXPORTS IMPROVE

India's export trade in glass and glassware at Rs. 20.30 million marked a definite improvement in the first three quarters of 1972-73 over the corresponding period of the previous year at Rs. 11.78 million. The export of glass improved from Rs. 4.5 million to Rs. 10.52 million and that of glassware from Rs. 5.24 million to Rs. 9.78 million.

In the first three quarters of 1972-73, the break-up in glass exports revealed that window glass was supplied abroad to the tune of Rs. 2.8 million, the major buyers being U.S.A., Indonesia, Mauritius, Sri Lanka and Singapore.

Wired glass sheets secured Rs. 1.04 million mainly from the supplies to Singapore and Saudi Arabia. Toughened sheet and laminated sheet glass fetched Rs. 1.24 million, U.S.A., Singapore and Iran being the import markets. Glass mirrors, glass spectacles and glass wool also figured prominently in the export trade.

In the glassware categories, glass stoppers, containers and closures were exported to the tune of Rs. 5.63 million in the period reviewed. Of this, glass flasks were supplied abroad to fetch Rs. 1.83 million. The Soviet Union was the major market for vacuum flasks at over Rs. 1 million. Glass tableware and other household and restaurant-ware were exported to fetch Rs. 0.6 million mainly from Nepal. Glass articles such as graded or calibrated laboratory-ware secured Rs. 3.53 million. Glass bangles which were mainly imported by Afghanistan secured Rs. 0.5 million.

DYEING AND TANNING MATERIALS ON EXPORT FRONT

India's exports of dyeing and tanning extracts and synthetic tanning materials nearly doubled during the first three quarters of 1972-73 (April-December 1972) as compared to the export value during the corresponding period of the preceding year (April-December 1971). The export earning was Rs. 74.85 million and Rs. 38.80 million during the periods.

During 1972-73 (April-December, 1972), all the dyestuff categories registered a clear uptrend. Synthetic organic dyestuffs, natural indigo and colour lakes, the leading category brought in Rs. 37.55 million as compared to Rs. 15.35 million. Interestingly, this single category fetched foreign exchange almost equivalent to the entire export earning of the three quarters of the preceding year. A large number of items such as acid dyes, basic dyes, direct dyes (sulphur dyes), disperse dyes, lakes solvent dyes, organic pigments, reactive dyes and azoic dyes, vat dyes, and other organic synthetic dyestuffs figured prominently in the export list. Netherlands, U.S.A., Bulgaria, Japan, Federal Republic of Germany, Singapore, U.K., Ir[illegible] ong Kong, Switzerland, Arab Republic of Egypt and hailand were the leading destinations.

Pigments, paints, varnishes and related materials onstituted the next best category having earned s. 35.79 million as against Rs. 22.53 million. Prepared aints, enamels, lacquers, varnishes and artist colours onstituted the principal items of export mainly directed U.S.S.R., U.K., Nepal, Iran, Arab Republic of gypt, Bangladesh, U.S.A., Kuwait, Netherlands, long Kong, Indonesia, Japan, Argentina and Brazil.

Dyeing and Tanning extracts and synthetic tanning naterials was yet one more category which improved s offtake to Rs. 1.51 million as compared to Rs. 0.91 nillion. Cutch extracts, food colours, tanning extracts f vegetable origin, myrobalan fruit extracts, wattle xtracts and synthetic tanning materials were the items nainly supplied to Singapore, France, New Zealand, Iungary and Federal Republic of Germany.

IANDLOOM EXPORTS BRIGHTEN

India's exports of handloom products are estimated o have earned foreign exchange to the tune of nearly Rs. 327 million during the first 11 months of 1972-73 April 72–February 73), registering a sharp increase of over 25 percent over the export value of Rs. 260.88 million during the corresponding period of the preceding year (April 71–February 72).

During the period reviewed during 1972-73, cotton handloom products constituted the major area of export expansion having brought in foreign exchange to the une of Rs. 252.30 million, registering a sharp increase of over 30 per cent over the export value at Rs. 192.54 million during the same period of the previous year. Of this, the share of cotton handloom fabrics accounted or Rs. 109.50 million while cotton handlooms non-fabrics fetched Rs. 52.38 million and cotton handloom readymade garments earned over Rs. 91 million.

In the cotton handloom fabrics sector, real Madras handkerchiefs (Rs. 34 million), lungis and sarongs (Rs. 21.82 million), Shirtings (Rs. 4.19 million) and Bleaching Madras (Rs. 1.60 million) were the principal items of export expansion. Besides, other cotton handloom varieties were equally active and earned Rs. 46.62 million. In cotton handloom non-fabrics area, bedsheets and blankets (Rs. 25 million), carpets and durries (Rs. 8.69 million), towels and napkins (Rs. 13.64 million) and pillow covers and table cloth (Rs. 1.24 million) were the prominent varieties active on the export front and others in the line fetched Rs. 3.78 million.

Silk fabrics products, the next important area of significant export earning secured Rs. 72.75 million during the first 11 months of 1972-73. The improvement in export earning of this sector too was evident as compared to its export value at Rs. 65.71 million during the comparable period of 1971-72. Of the total value of this sector, mulberry silk fabrics earned Rs. 60.77 million and tasar silk fabrics fetched Rs. 12.47 million. However, woollen items and fabrics of regenerated fibres were the two sectors which registered shortfall during April 72–February 73 against their values in April 71-February 72. In the former sector the export value declined to Rs. 1.09 million compared to Rs. 2.10 million while in the case of latter the value came down to Rs. 0.21 million from Rs. 0.53 million.

BOOST IN HAND TOOLS AND SMALL TOOLS EXPORT

India's exports of hand, small and cutting tools are estimated to have fetched foreign exchange to the tune of Rs. 58.84 million during the first three quarters of 1972-73 (April-December 1972), registering an impressive increase of over Rs. 16 million against the export value in the line at Rs. 42.46 million during the corresponding period of the preceding year (April-December 1971). In the terms of percentage the increase was over Rs. 38 per cent. Of this, hand tools and small tools netted Rs. 44 million while the share of cutting tools amounted to Rs. 17.75 million.

During the period under review of 1972-73, spanners constituted the major item of export expansion which brought in Rs. 19.78 million as against Rs. 14.57 million during the same period of 1971-72. Czechoslovakia emerged as the leading buyer which absorbed worth Rs. 3.58 million, replacing U.S.S.R. which was the leading buyer last year at Rs. 2.62 million. U.K. retained its position of the second important buyer, improving its intake to Rs. 3.50

million from Rs. 2.38 million. Poland which did not import at all during the last year, emerged as the next significant destination having bought worth Rs. 2.76 million, followed by Yugoslavia at Rs. 1.1 million. Federal Republic of Germany, Greece, Singapore, Philippines, Iran, Kuwait, Saudi Arabia, Arab Republic of Egypt, U.S.A. and Qatar were prominent among other buyers.

Pipe wrenches was the next important variety of export growth which improved its offtake more than 100 per cent to over Rs. 11 million as against Rs. 5.46 million. U.S.A. topped the list of buyers having imported worth Rs. 6.67 million, accounting for more than 50 per cent of the entire export earning of this variety. Federal Republic of Germany, the next important market purchased at Rs. 1.55 million. Czechoslovakia, Canada, Greece, Thailand, Iran, Australia, Poland, Saudi Arabia and Philippines were the other important markets.

With Czechoslovakia occupying the position of the topmost buyer, absorbing worth Rs. 1 million, pliers secured foreign exchange at a value of Rs. 2.46 million, during the period reviewed in 1972-73 as against Rs. 1.20 million (April-December 1971). Federal Republic of Germany, U.S.A., United Kingdom, Greece and Hong Kong were the other buying countries.

Steel files, another variety active in exports so far as volume of export is concerned, maintained more or less the same level as in the preceding year. Its export value was of the order of Rs. 6.19 million as against Rs. 6.23 million. However, the marginal shortfall during 1972-73 (April-December 72) was noticed because of lower offtake at Rs. 1.68 million by the Federal Republic of Germany as against Rs. 2 million during the last year. U.S.A., Nigeria, Indonesia, U.K., Thailand, Australia, New Zealand and Belgium were the other significant buyers.

Besides these principal varieties of hand tools and small tools, other items in the line too recorded sizeable export earning at Rs. 3.27 million as against Rs. 2.45 million. Sudan, Federal Republic of Germany, Netherlands, U.S.A., Iran, Thailand and Czechoslovakia were the leading markets among others.

Cutting tools sector also revealed clear uptrend ni exports during the period reviewed. As against Rs. 11.80 million fetched during the period of the three of quarters of 1971-72, the export value of cutting tools improved to Rs. 14.75 million during the comparable period of the following year 1972-73 (April-December 1972). The composition of exports during April-December 1972 was : Twist drills Rs. 7.1 million; tungston carbide tips and powder Rs. 3.7 million; Diamond tools and bits Rs. 2.73 million; taps and dies Rs. 0.78 million and others Rs. 0.27 million. Sweden, Czechoslovakia, U.S.A. and U.K. were the major markets while Bulgaria, Japan, Canada, Singapore, Federal Republic of Germany, Thailand, Switzerland and Australia were prominent among other buyers.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

CAPACITY EXPANSION PLANS IN DRUGS AND PHARMACEUTICALS

The Directorate General of Technical Development in the Ministry of Industrial Development have idenified quite a few areas in the drugs and pharmaceutical sector with substantial potential for capacity expansion. The current industrial licencing policy of the Government of India will encourage further licensing in these areas. Some of the examples of such products are aspirin, chloramphenicol, chloroquin and amodiaquin, folic acid, insulin, iso-nicotinic acid hydrozide, PAS and its salts, pencillin, phenobarbitone, phenyl butazole, streptomycin, tetracycline, Vitamins A, B_1, B_2, B_{12} and C and Xylocaine.

For aspirin, currently there are three private industrial firms with an installed capacity of 11 tonnes per annum. Their actual production in 1 was about 1002 tonnes. Although the industrial licensing policy is liberal for improving production capacity for aspirin, no foreign collaboration is to be allowed in view of the sufficient indigenous know-how available in the line. Again, no import of raw materials for the production of aspirin is allowed and all the major raw materials are available indigenously. They clude phenol, caustic soda, acetic anhydride and rbon dioxide.

In respect of chloramphenicol, the licensed and stalled capacity is nearly 70 tonnes per year. About tonnes were produced in 1971. As in the case of pirin, chloramphenicol is also open for liberal licens- g but no foreign collaboration is to be allowed for any pansion plan. The raw materials required including etic acid, caustic soda, Methyl Dichloro-acetate, d solvents are all available indigenously and only a uple of materials - benzaldehyde and nitro-acetate - enone are having to be imported.

Another area open for liberal licensing refers to e production of chloroquin and amodiaquin. A ar full utilisation of the available capacity has been fected in the production and out of 51 tonnes of the isting capacity, the production in 1972 was nearly 50 nnes.

While the anticipated production for folic acid for 973-74 is in the neighbourhood of 5 tonnes, actual oduction was little less than two tonnes in 1972, hich was more than the installed capacity at one nne. The Government of India are anxious to courage further growth of production in this line d are prepared to offer liberal terms for licensing. urrently, folic acid is being manufactured by M/s. dian Drugs and Pharmaceuticals Limited, Hyderabad ith technical assistance from the Soviet Union.

Among other specific lines of production in the rugs and pharmaceutical industry for which expansion lans are encouraged by the Indian Government, enicillin has a current installed capacity of 14 MMU of which over 230 MMU was actually roduced in 1972. Of the present capacity, 224 MMU is in the public sector - M/s. Indian Drugs nd Pharmacauticals Limited, Rishikesh and M/s. industan Antibiotics Limited, Pimpri. Most of the aw materials required for the production of penicillin re available indigenously. They are groundnut cake, gar, butanol, phenyl and acetic acid. Some quanti- ies of soyabean meal and phenyl acetamide are, how- ver, having to be imported.

Among Vitamins, the installed annual capacity osition is as follows: 49 MMU for Vitamin A, 30 onnes for Vitamin B_1, 5 tonnes for Vitamin B_2, 160 kg. for Vitamin B_{12} group and 370 tonnes for Vitamin C. All these lines of manufacture are open for liberal licensing and further expansion. Quite a few of the required raw materials for Vitamin production are available indigenously including lemon grass oil, acetic anhydride, and solvents for Vitamin A, dimethyl sulphate and sodium metal for Vitamin B-1, sodium metal and aniline for Vitamin B-2; ammonia, solvents and sulphuric acid for B_{12} group and methanol, cetone, and dextrose for Vitamin C.

While such is the framework of governmental policy in relation to capacity expansion of selected drugs and pharmaceuticals in the near future, this industry has made a vital contribution to the export growth in recent years. In 1971-72, the exports in the line amounted to Rs. 87 million as against Rs. 84.65 million in the preceding year. During the first three quarters of 1972-73 (April-December 72), the foreign exchange earning was of the order of Rs. 68.88 million.

PROGRESS IN ALUMINIUM FLUORIDE

The Aluminium fluoride industry has an installed capacity of about 2500 tonnes per annum. The production capacity is expected to improve to about 4600 tonnes by the end of 1973-74 as substantial additional capacity has been recently approved. Actual production in this priority area of chemical manufacture stood at 2915 tonnes in 1972. Viewed from the fact that in 1967 the production was only of the order of 167 tonnes, the growth in the domestic production over these five years is to be considered sizeable.

Under the current industrial licensing policy of the Government of India, aluminium fluoride attracts liberal treatment for capacity expansion and even foreign collaboration, although imports of the item are restricted.

Among the raw materials required for its production, aluminium hydroxide is available indigenously. Acid grade fluorspar is however, being imported. Fluorspar deposits have been discovered in the State of Gujarat and are presently being mined by the Gujarat Mineral Development Corporation. It is anticipated that acid grade fluorspar (97 per cent calcium fluoride) is likely to become available from the Gujarat mines in the near future, as the Gujarat Corporation has already set up a beneficiation plant.

With the availability of fluorspar from indigenous sources and the import substitution to be effected, domestic production of aluminium fluoride is likely to receive boost in the near future and the total demand for this product from the aluminium industry is likely to be met indigenously by about the Fifth Plan, ending 1978-79.

Besides the import substitution programmes for fluorspar and the anticipated rise in the production of aluminium fluoride, attempts are being simultaneously made to recover fluorine in the manufacture of phosphoric acid from rock phosphate. The Fertilizers and Chemicals Travancore (FACT) at Alwaye (Kerala) a public sector undertaking engaged in the manufacture of fertilizers, has already made some progress towards this end and it is believed that considerable quantities of aluminium fluoride would become available from this source also.

Currently, there are two manufacturing units engaged in the production of aluminium fluoride—Messrs Navin Fluoride Industries, Bombay and Messrs Averest Refrigerators Limited, Bombay. Both the firms have the facility of foreign technical collaboration.

With the various efforts being made for the installation of additional capacity, import substitution of raw materials and exploration of raw sources of availability, the output of aluminium fluoride is likely to improve substantially and the need for its imports is hoped to be considerably reduced in the near future.

ON CAUSTIC SODA INDUSTRY

Listed in the priority sector of industrial development, India's caustic soda industry has a licensed capacity of the order of 625,745 tonnes. With three public sector and 26 private industrial units engaged in this line of manufacture, the current installed capacity is in the neighbourhood of 439,200 tonnes. Additional capacity of nearly 66,000 tonnes has been approved and it is expected that the total capacity likely to materialise by 1973-74 will be 505,000 tonnes per annum. The production graph of caustic soda has been rising in recent years. The quantum of production in [illegible] stood at 259,340 tonnes which rose to 376,635 tonnes in 1971 and to nearly 392,000 tonnes in 1972.

The three public sector undertakings currently manufacturing caustic soda are Messrs Travancore Cochin Chemicals Limited, Alwaye, Kerala, Messrs National Newsprint and Paper Mills Ltd., Nepanagar, (Madhya Pradesh) and Messrs Durgapur Chemicals Limited, Durgapur. While foreign collaboration is not preferred in the future expansion plans in the industry, liberal treatment is allowed under the current industrial licensing policy of the Government of India. Import of this product has been canalised through the State Trading Corporation of India.

Of the raw materials required for caustic soda production, only 8 per cent of the total raw material value is having to be imported while the rest of the materials are available indigenously and they include salt, limestone and graphite anode.

The problem of indigenous design and manufacture of plants and machinery like mercury pump, chlorine cylinders and containers, chlorine compressors and high amperage switches is receiving close attention with a view to saving on the import of these equipment.

On the export front, caustic soda flakes have earned foreign exchange worth Rs. 1.02 million (10.92 million kgs.) in 1971-72, the major customers being Saudi Arabia, Indonesia, U.K. and Sudan. Caustic Soda in solid from has secured Rs. 1.84 million (1.79 million kg.). The solid form has been supplied mainly to Arab Republic of Egypt, Indonesia, Singapore and Nepal.

It is targetted that the actual production of caustic soda by the end of the Fourth Five Year Plan (1973-74) will be of the order of 500,000 tonnes as against 392,000 tonnes in 1972. The estimated demand by that year will also be more of less of the same quantum.

CAPACITY EXPANSION PLANS FOR BORIC ACID

Although there is only a single manufacturer engaged in the production of boric acid in India (M/s. Borax Morarji Limted, Bombay), the domestic pacity and production trends reveal encouragement. e licensed capacity including the letters of intent nted by Government is of the order of 9,000 tonnes r annum at present, of which the capacity already talled is about 3,000 tonnes.

From a meagre 570 tonnes in 1967, the production boric acid has gone up to 22956 tonnes in 1971. ith a view to encouraging new entrants in the field, e industry is open for liberal licensing. Even foreign laboration permitted on merits. The present oducer of the item, has the facility of foreign collabo- ion and their collaborator, M/s. Borax (Holdings), ndon, supply financial help and technical know-how ke.

Barring crude calcium borate, most of the raw aterials required for the manufacture of the acid cluding sulphuric acid and potassium permanganate e available indigenously. Even in respect of crude rate, borate minerals like colemnite and resorite are own to exist in the Ladakh region of Jammu and ashmir but due to difficult terrain and climatic con- tions, these deposits are not yet tapped. Presently e production of borax and boric acid is based on rate minerals imported from Turkey and the United ates of America. The import value in 1971-72 for lemnite was of the order of Rs. 1.38 million and at for resorite Rs. 5.48 million.

ACTS ON ALCOHOL INDUSTRY

Listed in the priority sector of industrial develop- ent, the alcohol industry in India has witnessed pid progress in recent years. With five public sector nd 60 private units engaged in its manufacture, the dustry has an installed capacity of 322,445 kiloliltres persent. An additional capacity of 6,000 kilolitres is been recently approved and by 1973-74 the total pacity is expected to reach 328,445 kilolitres.

The graph of alcohol production has been on the se. The quantum of output was of the order of 35,185 kilolitres in 1967 and it gradually improved to 54,078 kilolitres by 1971. The estimated demand by e end of the Fourth Five-Year Plan (1973-74) is to be in the neighbourhood of 400,000 kilolitres. Notwithstanding the substantial difference in the present rate of production and the estimated demand, the current import policy has restricted alcohol imports into the country, thus indicating the industry's confidence to raise the production level substantially.

No foreign collaboration proposal will be allowed for further development of this industry.

The alcohol industry in India has, besides meeting the rising domestic demand, made an entry in the export market. In the year 1970-71, a little over 5250 tonnes was supplied abroad to earn Rs. 3.34 million.

No raw material for alcohol production needs to be imported. Molasses which constitute the major raw material is available in plenty indigenously.

NUCLEAR OPERATIONS AND RADIATION PROTECTION

Nuclear operations in India have been able to maintain one of the best radiation safety records in the world. An important segment of the activities of the Health Physics Division of Bhabha Atomic Research Centre (BARC) at Trombay, relates to basic and applied research connected with health and safety. A variety of special instruments was designed and fabricated by the Division thereby reducing the country's dependence on imported instruments.

An important development in the Instrument Design of BARC was in respect of infra–red analyser for low levels of carbon monoxide and other pollutant gases. Produced in India for the first time, it has good scope for air pollution monitoring and process control in chemical industry.

Entrusted with the responsibility of a countrywise radiation hazards control programme, the Directorate of Radiation Protection in the BARC, has recently expanded its activities and aims at covering all radiation workers in the country in the course of time.

Improvements have also been evolved in the methods for nuetron dose assessments in criticality accidents. The method involves the derivation of a "special parameter" that delineates the shape of a neutron spectrum in the intermediate and fast neutron regions. The "special parameter" is derived from the ratio of activities induced in a pair of activation detectors. The above Directorate is also responsible for tendering advisory services in safe uses of radiation sources and in the planning of radiation installations and radio isotope laboratories in various fields such as medicine, industry, agriculture and research.

INVESTMENT POSITION IN GOVERNMENT UNDERTAKINGS

Total investment in Central Government undertakings other than departmental projects at the end of 1971-72 amounted to Rs. 50,520 million. This was made up of Rs. 27,420 million of equity capital and Rs. 23,100 million of long term loans, according to the Annual Report on Industrial and Commercial Undertakings of Central Government for the year 1971-72.

Covering 101 undertakings including Life Insurance Corporation of India and seven companies that were under construction during the year under-review, the Annual Report classified 93 running and promotional undertakings as follows: Hindustan Steel Limited, seven enterprises engaged in petroleum exploration, refining and marketing; 48 industrial and manufacturing undertakings other than H. S. L. and petroleum based enterprises, seven trading concerns, 21 commercial and miscellaneous running concerns and nine promotional and developmental undertakings. The biggest Indian company, M/s. H. S. L. with an investment of Rs. 10,380 million suffered during 1971-72 a net loss of about Rs. 456.3 million while Petroleum enterprises earned a net profit of Rs. 498.7 million.

The industrial and manufacturing concerns revealed mixed performances during the year. The net profit of twenty-six companies amounted to Rs. 268.9 million and the net losses of twentytwo concerns were Rs. 629.9 million. The trading concerns made a net profit of Rs. 107.1 million. Commercial and miscellaneous concerns earned a profit of Rs. 109.7 million while eight others in the group suffered a net loss of Rs. 87.8 million. Of the promotional and developmental undertakings, five accounted for a net profit of Rs. 12.1 million while four had a net loss of Rs. 13 million.

The first ten Government companies in order of investment in 1971-72 were : Hindustan Steel Limited (Rs. 10,380 million), Bokaro Steel Limited (Rs. 6,550 million), Food Corporation of India (Rs. 3,400 million), Heavy Engineering Corporation Limited (Rs. 2550 million), Fertiliser Corporation of India (Rs. 2520 million), Oil and Natural Gas Commission (Rs. 2.240 million), National Coal Development Corporation (Rs. 2090 million), Bharat Heavy Electricals Ltd. (Rs. 1840 million), Nevyeli Lignite Corporation Ltd. (Rs. 1,800 million) and Jute Corporation of India (Rs. 1,220 million).

BANK RATE RAISED

The Reserve Bank of India has recently announced that its bank rate has been raised from 6 per cent to 7 per cent. It has also raised the minimum statutory reserves to be maintained by scheduled commercial banks with the Reserve Bank from 3 per cent to 5 per cent. A minimum lending rate of 10 per cent on bank advances has also been fixed. The minimum rate will not apply to those categories which are specifically exempted from those requirements, such as the ones covered by the Credit Guarantee Schemes, exports, primary cooperatives, public sector food procurement, storage and distribution.

The revision of the bank rate is stated to be an anti-inflationary measure. The need to curb the growth of bank credit has been felt after a record expansion of over Rs. 8800 million in the busy season ending April 1973 and the continuing rising trend even afterwards. The Government, concerned over the monetary expansion and the unabated price rise, have decided on this step which is aimed at bringing about credit contraction.

The bank rate was earlier raised to 6 per cent in January 1971. The effect of a further 1 per cent increase in the prime rate will be to raise the cost of borrowing and make money dearer.

TRODUCTION OF INDIGENOUS IG WELDING SET

M/s. Indian Oxygen Ltd. (IOL) has recently troduced an indigenous MIG welding set.

Metal Inert Gas Welding process or MIG as it is pularly known, is developing rapidly in the techno- gically advanced countries. In India too, there is an er increasing field of application for this process but e development has so far been restricted to import the equipment.

With the launching of MIG 200 and the proposed unching of MIG 400 which is under development, ost of the MIG applications in the country will be vered by the equipment marketed by IOL.

In the process, an electrode is continuously fed rough a torch and the arc is shielded by a shroud of otective gas like argon, carbon dioxide or argon-rich ixture. The process is semi-automatic. In other orks, the wire feed is automatic but the torch is quired to be carried forward manually along the ngth of the weld. Because of the continuous feeding the wire electrode and the use of high current density, e welding rate is very fast. Moreover, no flux is used the process. Therefore, peeling off slag from the eld which takes some time is completely eliminated.

MIG II wire feeder unit with IT 4 torch and 200 MMR rectifier is primarily designed for use on mild eel with limited use on aluminium alloys. Both ownhand and positional welding from 1 mm to pproximately 6.3 mm thickness of mild steel can be one with ease. The set is generously rated for high uty cycles and has been proved in industry at 200 mps currents at 75 per cent duty cycle. The speed ange of the wire feeder is 2.5 - 15 m/min (100-600 ches per minute). The set has been especially built withstand workshop useage and is designed for imple and quick maintenance.

CASTING RESIN SYSTEM FOR AERONAUTICAL EQUIPMENT

An indigenous casting resin system, used in the manufacture of aviation electronic equipment has been designed and developed by Messrs Hindustan Aeronautics Limited and Messrs Dr. Beck and Company jointly.

In the manufacture of aviation electronic equipment, a variety of glues, potting and encapsulating compounds, varnishes and enamels of various bases are used.

The requirements of the materials used in aviation equipment are more stringent and critical than those for ground and other equipment. Most of the materials used in the avionic equipment should withstand a wide range of temperatures, i.e. −60°C to +100°C, altitudes of approximately 20 km. and humidity of 98 per cent at 40°C for about 48 hours in addition to the tests of vibration, impact etc.

One of the potting compounds used by Hindustan Aeronautics Ltd. in production, is a Russian compound. This compound is used for encapsulating a directional antenna unit used in one of the equipment. The antenna unit is a rectangular block assembly of 18.5 x 76 x 219.3 mm consisting of ferrite cores wound with enamelled copper wires. The antenna unit after being filled with the compound has the dimensions 21 x 78.5 x 223 mm.

This special purpose potting compound has hitherto been imported from the U.S.S.R. As a part of import substitution activity, the work of finding an indigenous compound equivalent to the Russian compound, was taken up jointly by Hindustan Aeronautics Ltd. and Dr. Beck & Co. (India) Limited. Consequently intensive trials were continued and compound Dobeckot E4 +Dobeckot C +Hardener EH 402 was tried for potting work.

This system withstood all tests including the temperature test at – 60° C. The antenna used in the system also passed all the necessary tests.

EXPORT VALUE OF SELECTED ENGINEERING PRODUCTS

(Rs. million)

ITEMS	1971-72	April - December 1971	 1972
Auto and Auto Parts	151.40	108.90	104.90
Electric Wires and Cables	112.55	80.15	93.60
Bicycles and Parts	80.45	62.25	79.65
Railway Coaches and Wagons	65.65	51.75	15.60
Hand Tools and Small Tools	61.00	42.45	58.85
Transmission Line Towers and Poles	37.60	24.95	40.70
Machine Tools	30.45	18.10	12.85
Batteries, Dry and Storage	25.85	17.85	19.60
Radios and Components	22.30	17.00	15.10
Electric Fans and Parts	15.65	12.00	14.30
Railway Track Materials	13.50	7.45	6.45
Builders' Hardware Including Locks	13.50	9.65	10.15
E.P.N.S. Ware	12.35	8.90	14.30
Electrical Accessories and Appliances	11.60	5.95	7.35
Sugar Mill Machinery	11.10	7.55	10.55
Air Conditioners, Refrigerators Water Coolers etc.	8.50	6.40	8.25
Bright Steel Bars and Shaftings	8.50	6.65	8.00
Oil Lamps and Stoves	8.45	5.95	9.80
Boilers and Fittings	8.15	7.15	4.30
Water and Sanitary Fittings	7.45	5.50	8.15
Mechanical Pumps	7.40	5.25	4.35
Steel Furniture	7.20	5.30	4.40
Aluminium Utensils and Capsules	6.55	4.85	5.95
Bolts, Nuts, Rivets and Washers	6.45	5.15	3.75
Fire Arms of Sports	5.60	4.05	3.60
Sewing Machines and Parts	5.50	3.70	3.20
Aluminium Sheets, Circles and Foils	5.35	4.60	2.60
Air Compressors and Parts	4.50	3.60	4.15

Source : Engineering Export Promotion Council, Calcutta.

INERALS IN INDIA

PROFILE

The total value of minerals produced in India, cluding atomic minerals and common salt are estimat- l at Rs. 5070 million for the year 1972. The value as of the order of Rs. 4950 million in 1971, Rs. 4865 illion in 1970 and Rs. 4660 million in 1969.

Coal ranks first in terms of mineral resources in idia. Excluding lignite, the production of coal is :pected to be 75 million tonnes in 1972-73, 3 million nnes more than in the preceding year. The most nportant event recently in the coal industry was the ke-over by the Government of India of the manage- ent of the non-coking coal mines. The management 738 non-coking coal mines spread over seven States id employing about 200,000 workers has been taken ver with a view to ensuring coordinated development coal production and optimum utilisation of coal sources. Of the total production of 721 million nnes in 1971-72, the share of non-coking coal was .54 million tonnes. It is estimated that coal produc- on by 1978-79 (end of the fifth plan) will be in the eighbourhood of 143 million tonnes.

The production of **lignite** in 1972-73 has been timated at 2.85 million tonnes. Since the first lignite ed was exposed in 1971, upto 1971-72 about 27 iillion tonnes of the mineral had been mined. The evyeli Lignite Corporation, Madras absorbs the gnite mined but the Corporation has presently the roblem of inadequate lignite production and as such ecessary steps have been initiated to further step up s production to the level of 4.5 million tonnes per nnum by 1975-76.

Iron ore ranks foremost in terms of mineral resources ext only to coal. The estimated reserves of the ore in ndia are of the order of 10,000 million tonnes. It is ossible to discover some more promising and sizeable eposits by intensive exploration. India ranks seventh the iron ore resources among the iron ore producing ountries. It is one of the few countries possessing the ighest grade of iron ore in the world. Production-wise, he ranks ninth among the countries following U.S.S.R., J.S.A., France, Australia, China, Canada, Sweden nd Brazil in that order. Iron ore leads the group of ninerals (about 20) that are being exported from ndia presently and constitutes one of the largest ingle export earners, next to jute and tea.

With the expansion of steel ingot capacity in India and the endeavour to promote export of iron ore, domestic production of the ore also registered a significant uptrend in the last two decades. From a figure of 3 million tonnes in 1950, the production rose to 16.61 million tonnes in 1960 and 34 million tonnes during 1971-72. Export of iron ore increased from 0.8 million tonnes in 1960 to 21 million tonnes in 1971-72. The export in 1971-72 fetched about Rs. 1110 million in foreign exchange. The exports during 1972-73 are expected to reach a level of 22 million tonnes.

In achieving this progress, the National Mineral Development Corporation has played notable role. The production projects under the control of the Corporation are Kiriburu Iron Ore Project (Orissa) and Bailadila Iron Ore Project (M.P.), besides the Panna Diamond Mining Project at Panna (M.P.). There are also projects under construction such as Kiriburu expansion and modification Scheme, Bailadila Iron Ore Expansion Project and Donimalai Iron Ore project. Under planning, there are several projects and schemes - among them being Majhgawan Expansion Scheme for diamond mining and pelletisation plans of Donimalai and Bailadila finds. Feasibility studies are also being conducted on the Ramandurg and Meghahatuburu deposits.

Keeping in view the important role of iron ore in the mineral sector of the country's economy, Government have recently set up the Iron Ore Board which is to formulate and ensure effective implementation of all prospective iron ore development plans.

Manganese ore, - a comparatively scarce mineral, has always been an export oriented industry. India ranks fourth in the world as a manganese exporter. Over the last decade, about 78 per cent of the country's production has been exported. Export demand has been mainly for the high grade ore for the production of ferro-manganese.

India's manganese ore production during 1972 was 1.53 million tonnes. The value of exports during 1971-72 was Rs. 105.98 million; in the first three quarters of 1972-73 the export value was Rs. 67.38 million. In 1971-72, the export of first grade ore (48% and over manganese content) fetched Rs. 6.45 million mainly from Japan, Canada and Belgium. The second grade ore (manganese content between 35% and 48%) secured

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Rs. 42.18 million; Japan absorbed Rs. 22 million worth, and Czechoslovakia, Belgium, Bulgaria and Canada were the other markets. Ferro-manganese ore was exported to the tune of Rs. 56 million and Japan again was the principal buyer (Rs. 54.75 million).

Aluminium is the only non-ferrous metal for the production of which adequate ore reserves viz. bauxite, are available in India. Owing to its versatile qualities, aluminium is a good substitute in various spheres for copper and zinc for which the country has to mainly depend on imports. Aluminium production has witnessed rapid growth in the country in the last decade or so. In 1947, there were only two small aluminium smelters with a total capacity of about 7,000 tonnes per annum : one at Alwaye (Kerala) and the other at Asansol (West Bengal). The present installed capacity is in the neighbourhood of 178,850 tonnes per year. It is proposed to set up an additional capacity of 251,000 tonnes (150,000 tonnes in the public sector and 101,000 tonnes in the private sector) by the end of the Fifth Five-Year Plan. Domestic demand for aluminium during 1972-73 and 1973-74 is estimated at 210,000 tonnes and 230,000 tonnes respectively. The production during 1972-73 and 1973-74 is expected to be 180,000 and 200,000 tonnes respectively. Self-sufficiency in aluminium is expected to be achieved early in the Fifth Five Year Plan.

In the private sector, there are four units producing aluminium - Indian Aluminium Company with factories at Hirakud, Alwaye and Belgaum; Hindustan Aluminium Corporation at Renukoot; Madras Aluminium Company at Mettur; and Aluminium Corporation of India located at Asansol, and in Orissa. The public sector project, M/s, Bharat Aluminium Company located at Korba (M.P.) and Ratnagiri (Maharashtra) has presently no installed capacity but it has a potential capacity of 100,000 tonnes and 50,000 tonnes respectively, per annum.

The Korba Aluminium Complex is based on the bauxite deposits in the Amarkantak and Phutkapahar areas in Madhya Pradesh and electric power from the Korba Thermal Power Station. Its production is expected to be 200,000 tonnes per year of alumina, 100,000 tonnes of aluminium metal including 60,000 tonnes of aluminium semis (rolled and extruded products and wire rods). The alumina plant has been just commissioned and the smelter and fabrication facilities will go on stream by the middle of 1976. The Ratnagiri Project is to have a capacity to produce 50,000 tonnes of aluminium metal per year including 25,000 tonnes of conductor grade wire rods. This project is based on the utilisation of bauxite deposits located in Kolhapur district in Maharashtra and hydel power from neighbouring Koyna Hydel Station.

While the aluminium production in 1971-72 was 181,485 tonnes, the output of aluminium foils in the year was 5,142 tonnes, aluminium extruded products 13,205 tonnes, aluminium sheets and circles 35640 tonnes, aluminium wire rods for ACSR/AAC conductors 106,800 tonnes.

Lead is presently produced in India in the Lead Smelter of the Hindustan Zinc Limited (Bihar). The plant has an annual production capacity of 3,500 tonnes. Zinc production in India commenced during 1967-68 when two smelters namely, Hindustan Zinc Limited (public sector) and Cominco Binani Zinc Ltd. (private sector) with an installed capacity of 28,000 tonnes per annum were commissioned. In 1972-73, the actual production of zinc concentrates was 18,516 tonnes, lead concentrates 5045 tonnes, zinc metal 9560 tonnes, pig lead 2850 tonnes and zinc cathodes 13,185 tonnes.

The Hindustan Zinc Limited seeks to expand capacity of the **zinc** smelter from 18,000 tonnes to 36,000 tonnes with increase in capacity for bye-products and matching mining facilities. It also seeks to set up a new 30,000 tonnes per annum zinc smelter based on imported concentrates at Visakhapatnam. The Cominco Binani has a licensed capacity of 120,000 tonnes, but utilizes imported zinc concentrates in its smelter. Its zinc metal production in 1972-73 was about 14,000 tonnes.

India is deficient in **copper** and has to import it heavily to meet its requirements. The import during 1971-72 was 56,000 tonnes, valued at Rs. 512 million. In the past two years, three major areas of copper mineralization have been delineated. They are the Khetri and Kolihan deposits in Rajasthan, the Singhbhum copper belt in Bihar and the Malanjkhand deposit in the Balaghat district in Madhya Pradesh. The Hindustan Copper Limited in the public sector has under its aegies a number of plants in Rajasthan including Khetri copper project, Dariba Copper deposit and Chandmari Copper deposit and Indian Copper complex, Ghatsila (Bihar). ☐

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PAPER AND PAPER PRODUCTS EARN MORE

A prominent importer of paper and paper manufactures till a few years ago, India has now emerged as a manufacturer of a wide range of paper and paper products. A large number of markets abroad are purchasing the products from India. During 1971-72, India's exports of paper, paper-board and manufactures amounted to Rs. 29.40 million. Even during the first three quarters of 1972-73 (April-December 72), the exports outstripped the entire preceding year's export earning by securing foreign exchange to the tune of Rs. 32 million.

Of the total exports during April-December 1972, paper and paper-board fetched Rs. 16.70 million, while the share of articles made of paper, pulp or paper–board accounted for Rs. 15.26 million. In the former category, poster paper, printing paper (uncoated), drawing paper, writing paper, kraft paper and kraft paper-boards, cigarette paper in bulk rolls and sheets, machine-made paper and paper-board in rolls or sheets, tissue paper, packing and wrapping paper, finish paper, multiplex paper-board, woodpulp board, fibre board and other building board of woodpulp of vegetable fibres, hand-made paper, composite straw-board, adhesive paper, wax paper and other composite paper–boards were supplied to Bangladesh, Nigeria, Singapore, Iraq, Iran, Kenya, Saudi Arabia, Qatar, Sri Lanka, Arab Republic of Egypt, Nepal, Indonesia and Afghanistan. Paper–board boxes, paper bags, box files, writing envelopes and writing pads, writing blocks and letter pads, other paper stationery for correspondence, exercise book registers, account book registers, diary and note books, cigarette paper (cut to size), carbon paper, duplicating paper, copying paper, paper roll cards for calculating and statistical machines, mono-type news tap, paper strips, bobbins, spools, cops etc. of paper and other articles of paper were mainly supplied to Arab Republic of Egypt, Indonesia, Sri Lanka, Bangladesh, Thailand, Vietnam Republic, Singapore, Iraq, Uganda, Nepal and Iran.

Adding to the export effort of the paper and paper articles manufacturing sector of Indian economy M/s. Tribeni Tissues, Calcutta, manufacturer and exporter of a wide range of items in the line, has to its credit an export turnover of Rs. 10 million during the year ending September, 1972. The firm stepped up its exports to this level from Rs. 8.36 million during the preceding year.

The firm's manufacturing plant is located near Calcutta and installed capacity is of the order of 7500 tonnes of pulp, 8,500 tonnes of speciality paper and 3,000 tonnes of chalk. During the period under review, the Calcutta firm's net sales amounted to over Rs 61 million as against only Rs. 33.8 million during the preceding year.

The licensed capacity of the industry is of the order of 1.22 million tonnes. The installed capacity is placed at 953,820 tonnes and additional capacity recently approved was 1.10 million tonnes. Actual production was 792,000 tonnes in 1972. Foreign collaboration is not permitted in future plans for capacity expansion, except for specialities like insulating paper filter paper and cigarette tissues. All the major raw materials required for the paper industry are available indigenously. Only in respect of some spares and consumable stores, marginal imports are effected. Foreign exchange requirements for these imports are only about 40 percent of the value of the annual turnover.

AUTOMOBILES TO WORLD MARKETS

Adding to India's export endeavour of automobiles and auto parts, M/s. Ashok Leyland Limited, Madras, earned foreign exchange of a value of Rs. 15.90 million during 1971-72. The firm exported commercial vehicles of both passenger and goods types as also their components, diesel engines for industrial and marine applications and their parts to a large number of countries abroad.

The product range of the company–developed from vehicles of 12.156 tonnes GVW up to those of 45.72 tonnes GTW–includes haulage and passenger vehicles, tippers, dumpers, power diesel engines for mobile air compressors, generating sets, drilling rigs and fishing trawlers.

India's exports in automobiles and parts amounted to Rs. 105 million in 1971-72. Automobile buses and lorries earned Rs. 18 million, automobile chassis with engines Rs. 16.8 million, automobile engines and parts Rs. 14.7 million, cars and jeeps Rs. 8.30 million, autorikshaws Rs. 2.8 million, motor cycles and parts Rs. 1.10 million and automobile parts Rs. 42.35 million. Motors, scooters and parts, fork lifts, trucks and parts and fire brigade cars were the other categories of exports.

Sri Lanka (Rs. 4.96 million); South Yemen (Rs. 3.84 million), Arab Republic of Egypt (Rs. 3 [illegible] million), Nigeria (Rs. 1 85 million), Afghanistan (Rs. 1.85 million) and Qatar (Rs. 1.60 million) were the leading destinations for automobile buses and lorries, while for cars and jeeps, Jordan (Rs. [illegible] million) and Sri Lanka (Rs. 2.45 million) were the prominent markets. Automobile chassis with engines were mainly sought by Arab Republic of Egypt (Rs. 8.85 million), Yugoslavia (Rs. 4.20 million) and Sri Lanka (Rs. 3.45 million) and automobile engines and parts were absorbed by Federal Republic of Germany (Rs. 10.75 million) and U.K. (Rs. 1.60 million).

Besides, a large number of countries bought automobile parts among which Arab Republic of Egypt (Rs. 4.80 million), Yugoslavia (Rs. 4.05 million),

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igeria (Rs. 3.75 million), Singapore (Rs. 3.35 million), idan (Rs. 2.20 million), Iran Rs. 2.15 million), i Lanka (Rs. 2.05 million), U.K. (Rs. 1.75 million), bland (Rs. 1.75 million), Kenya (Rs. 1.65 million), anzania Republic (Rs. 1.60 million), Saudi Arabia ks. 1.35 million), Philippines (Rs. 1.15 million), uwait (Rs. 1.10 million), Dubai (Rs. 1.10 million) id Afghanistan (Rs. 1.05 million) were prominent.

In the organised sector, there were seven units igaged in the manufacture of commercial vehicles in 972. As against their installed capacity of 62,000 imbers per annum, the production was estimated 37,466 numbers. Against the installed capacity 10,000 numbers, the production of jeeps by one iit was of the order of 2,590 numbers, while in the ir manufacture, the installed capacity of 47,400 imbers was spread over among three units and the oduction was estimated at Rs. 40,040 numbers.

The figures of installed capacity and actual oduction during 1972 in diesel engines (vehicular) as : 6000 numbers and 1882 numbers respectively. 1 the same year, in the organised sector, the roduction of other vehicles was : motor cycles 7,557 numbers, scooters 64,331 numbers, 3 wheelers 790 numbers and mopeds and scooterettes 21607 umbers.

AINTS AND VARNISHES OR EXPORT

India's paints and varnishes industry, although of a ecent origin, has made significant strides in production nd export trade in recent years. The industry's oreign exchange earning during 1971-72 totalled ls. 28.50 million. During the first nine months of 972-73 (April-December 72), the exports were of the rder of Rs. 35.78 million.

During the first three quarters of 1972-73, a wide ariety of items, such as, chrome pigments, ultramarine olue, printing inks, prepared organic dyestuff pignents dry, prepared inorganic pigments, metallic owder prepared as paints, dyes in the form of packing, eady mixed paints, synthetic enamels, varnishes, artist colours and other paints constituted the princioal lines of exports. U.S S.R., Nepal, Bangladesh, Thailand, Argentina, U.S.A. and Ghana were the leading markets.

M/s. Kamani Metallic Oxides Private Limited, Bombay, one of the firms engaged in the manufacture of paints, varnishes and allied products improved its export turnover to nearly Rs. 3 million in 1971-72 from Rs. 1.66 million in 1970-71. The firm supplied zinc oxide and lead oxide to a large number of countries including Hong Kong, Thailand, Malaysia, Kuwait, Iran, Sri Lanka, Singapore, Indonesia, Philippines, Uganda and South Vietnam during the year under review.

In the organised sector, as against the installed capacity of 117,300 tonnes for paints, enamels and varnishes in 1972, the actual production of 16 units engaged in the line was of the order of 69000 tonnes. In the same year, as against the installed capacity of 4500 tonnes for wire enamels/impregnating varnishes, the actual production of a single unit was 3700 tonnes while in the zinc oxide manufacture the installed capacity of 19000 tonnes, was spread over among 4 units and their production was estimated at 4950 tonnes.

The estimated demand by 1973-74 has been placed at 140,000 tonnes. Additional capacity recently approved is of the order of 1350 tonnes. By the end of 1973-74, total capacity likely to be materialised is estimated at 118,000 tonnes. In the industry, no foreign collaboration is required. The raw materials required are pigments, synthetic resins, certain solvents and additives. However, titanium dioxide, carbon black, xylene, some synthetic resins and some organic solvents are imported. Presently M/s. Travancore Titanium Products Ltd. have been permitted for sizeable expansion in their manufacture of titanium dioxide. On completion of this project, it is expected that the import content of the industry will come down to about 5 per cent.

GLASS AND GLASSWARE ON EXPORT FRONT

India's exports in glass and glassware during the first three quarters of 1972-73 (April-December 72) shot up to an all time high level at Rs. 20.30 million, outstripping even the entire preceding year's earning at Rs. 14.45 million.

During the first three quarters of 1972-73, glass in the form of glass rods, tubes and waste glass, optical elements, window glass, polished plate glass, wired glass sheets, safety glass toughened or laminated, laminated sheet and plate shaped glass, mirror glass (on surface metal coated-cut to size) and other varieties of glasses were mainly supplied to Iran, Sudan, Malaysia, Singapore, U.S.A , Indonesia, Mauritius and Sri Lanka.

In the category of glassware, bottles and phials, vials for injectable purposes, inners glass for vacuum flasks, household and hotel and restaurant glassware, glass ampoules, glass tubes for colour comparison, microscope slides, other laboratory glassware, glass bangles, imitation precious and semi-precious stones, fancy and decorative glass smallwares and articles, were the items prominent in the export trade. U.S.S.R., Australia, Federal Republic of Germany, Arab Republic of Egypt, Nepal, Bangladesh, Iran, Iraq, Afghanistan and Philippines were the prominent importing countries.

Among the industrial units engaged in the manufacture and exports of glass and glassware, M/s. Hindustan Safety Glass Works Limited, Calcutta, improved its exports from merely Rs. 0.80 million in 1970-71 to Rs. 1.30 million during 1971-72. The firm supplied coloured glass sheets to Philippines and Thailand during the year under review.

In the organised sector, there were six units engaged in the manufacture of glass sheets. Against their installed capacity of 22 million sq. meters, their actual production was estimated at 19 million sq. meters in 1972. Foreign collaboration is not permitted in fresh proposals for capacity expansion.

WOOLLEN KNITWEAR TO EAST EUROPE

India's exports of wool and woollens at Rs. 480 million registered a sharp rise of about 34 per cent in 1972-73 over the export value during 1971-72 at Rs. 358 million.

During 1972-73, carpets, druggets and numdahs emerged as the leading category which brought in foreign exchange to the tune of Rs. 212.50 million accounting for more than 44 per cent of the entire export earning. Woollen hosiery, the next important category fetched as much as Rs. 168.80 million, followed by raw wool at Rs. 6 million, woollen blankets Rs. 3 million and shawls Rs. 2.88 million.

Besides, shoddy wool, wool tops and worsted yarn were the other lines of marginal export expansion while woollen and mixed fabrics earned Rs. 17 million against Rs. 23.55 million and woollen readymade garments fetched Rs. 14.58 million against Rs. 19.38 million.

During the year, Federal Republic of Germany, U.S.A., U.K., Canada, Netherlands and Sweden were the leading destinations for carpets, druggets and numdahs while U.S.S.R., Poland, Czechoslovakia, Libya, Hungary, Kuwait and Malaysia constituted the prominent markets for woollen hosiery. Belgium and U.K. were the main buyers of raw wool and Belgium, Kenya and Muscat were the main importing countries for blankets. Besides, shawls were mainly absorbed by Saudi Arabia, Bahrein Islands, Dubai and Arab Republic of Egypt.

One of the units in the line M/s. Kansal Hosiery Works, 648, Rupa Street, Ludhiana-1, exported woollen knitwear to the tune of Rs. 3.3 million in 1971-72. Their exports during the year were mainly directed to U S.S.R. which alone purchased worth Rs. 2.66 million. Among other buyers, Hungary bought worth Rs. 361,000 and Czechoslovakia worth Rs. 282,000. They are hopeful of stepping up their exports in 1972-73 to the East European markets, particularly the Soviet Union, Hungary and Czechoslovakia.

EXPORT PERFORMANCE AND POTENTIAL

HANDICRAFTS EXPORTS UP

Registering a sharp rise of over 36 per cent, India's exports of handicrafts including gems and jewellery reached a level of Rs. 610 million during the first half of 1972-73 (April-September 1972) as against Rs. [illegible] million during the corresponding period of 1971-72.

During April-September 1972, an appreciable crease in the overall exports of handicrafts was wit- ssed mainly because of the increase in the value of ollen carpets, art metalware, woodware, miscellaneous ndicrafts and also because of sizeable increase in the ports of precious, semi-precious and synthetic stones. f the total exports during the period reviewed in 72-73, the share of gem and jewellery amounted to s. 355 50 million as against Rs. 252.52 million (April- ptember 1971) while all the other handicrafts counted for Rs. 254.55 million as compared to Rs. 194 illion. In terms of percentage, the increase was of e order of 40 per cent and 31 per cent in respect of ms and jewellery and handicrafts respectively.

Valuewise, the composition of exports during 972-73 (April-September 72) was : precious, semi-pre- ous and synthetic stones Rs. 351.10 million against s. 247.67 million in April-September 1971; woollen arpets and druggets including namdahs Rs. 101.11 illion against Rs. 68 million; art metalwares Rs. 52.93 illion against Rs. 38.44 million and woodwares s. 21.60 million against Rs. 15.93 million. Besides, iscellaneous handicraft exports too registered a izeable improvement at Rs. 34.22 million as against s. 26.67 million. A large number of other items, uch as, shawls, jari, ivory products, carpets, rugs, lurries etc. of cotton, jewellery of other precious metals platinum etc.) and silver jewellery were the specific tems of export expansion. However, hand printed extiles, imitation jewellery, embroidered goods and gold jewellery constituted the items of reducted offtake luring the period under review of 1972-73 as compared o the last year.

DIESEL ENGINES ON EXPORT FRONT

India-manufactured diesel engines, parts and pumps are in wide spread demand abroad. During 1971-72, these items fetched foreign exchange at a value of Rs. 43.12 million, registering about 100 per cent increase over the export earning of the previous year in the line at Rs. 22.61 million.

During 1971-72, of the total value, the share of diesel engines amounted to Rs. 27.57 million, accounting for nearly 63 per cent of the total export earning. In the preceding year (1970-71), the foreign exchange earning from overseas supply of diesel engines was of the order of only Rs. 12.71 million.

In terms of quantity, 10765 diesel engines were supplied abroad (1971-72) as against only 4700 numbers in the preceding year.

Bangladesh which did not purchase at all in the preceding year, emerged as the leading buyer having bought 2779 numbers valued at Rs. 8 million. Saudi Arabia too improved its offtake from Rs. 2.94 million (1482 numbers) in 1970-71 to Rs. 6.54 million (3232 numbers) and stood as second biggest buyer, followed by Iran at Rs. 1.93 million (1022 numbers), Sudan at Rs. 1.89 million (651 numbers) and Arab Republic of Egypt at Rs. 1.64 million (167 numbers). Libya, Nigeria, Thailand, Afghanistan, and Singapore were prominent among other buyers.

Diesel engine parts too accounted for significant increase in export earning during 1971-72, compared to their value last year. The exports rose to Rs. 10.55 million from Rs. 6.81 million. Arab Republic of Egypt (Rs. 1.70 million), Iran (Rs. 1.6 million), Saudi Arabia (Rs. 1.34 million), Thailand (Rs. 0.97 million), Sudan (Rs. 0.70 million) and Nigeria (Rs. 0.67 million) were the prominent markets.

Diesel pump sets, the next area of export expansion fetched more at Rs. 5 million in 1971-72 as against Rs. 3 million in the preceding year. Here again, Bangladesh constituted the largest single buyer which absorbed bulk of supplies at a value of Rs. 3.17 million (462 numbers). Afghanistan, Iran, Libya, Nigeria, Dubai, Iraq, Thailand and Singapore were other prominent destinations.

EXPORT OF BICYCLES AND PARTS UP

India's exports of bicycles and parts registered an impressive rise of over 27 per cent during the first three quarters of 1972-73 (April-December '72) as compared to their earning during the corresponding period of the preceding year. The export value improved to Rs. 79.65 million from Rs. 62.75 million during these periods. The value for the full year of

1972-73 will thus be a sizeable improvement over the 1971-72's figure of Rs. 80 million.

In the period reviewed during 1972-73, bicycles alone secured Rs. 20.60 million while the share of bicycle parts amounted to Rs. 59 million. During the corresponding preceding period (April-December 1971), the value of complete bicycles and bicycle parts was Rs. 14.76 million and Rs. 47.50 million respectively.

Iran, topped the list of buyers of complete bicycles during April-December 1972 having purchased worth Rs. 5.46 million, as compared to its intake at Rs. 2.84 million during the same period of the previous year. It replaced Nigeria which was the leading buyer in the earlier year at Rs. 4.44 million. Indonesia emerged as the second biggest buyer having bought worth Rs. 5.43 million. Nigeria constituted the next best market having purchased worth Rs. 3.32 million, followed, by U.S.A. at Rs. 1.65 million and Bangladesh at Rs. 1.41 million. Malawi, Bulgaria, Zambia, Kenya, Mauritius and Afghanistan were prominent among the other buyers.

Nigeria continued to be the largest buyer of bicycle parts as in the last year, having fetched worth Rs. 15.10 million during the first three quarters of 1972-73. Indonesia was the next best destination which purchased worth Rs. 10.20 million, followed by Singapore at Rs. 4.31 million, Iran at Rs. 3.35 million, Thailand at Rs. 2.48 million, Tanzania at Rs. 2.21 million, Malaysia at Rs. 2.16 million, Yugoslavia at Rs. 1.91 million, Zambia at Rs. 1.41 million, Kenya at Rs. 1.39 million, Iraq at Rs. 1.18 million, Malawi at Rs. 1.12 million and Uganda at Rs. 1 million.

INDO-BANGLADESH TRADE TALKS

Trade relations between India and Bangladesh were discussed recently by the Minister of Commerce, Government of Bangladesh, and India's Minister of Commerce.

The Bangladesh Minister mentioned that his country would require certain commodities and depended on India for their supply. Some of the specific items mentioned were coal, textiles, cotton yarn and cement. The soft loan of Rs. 150 million was mentioned by the Bangladesh Minister who indicated that Bangladesh would like to buy saris and lungis from India as India was one of the very few countries which were producing these items.

Both the Ministers agreed that trade between the two countries should be at the Government level or with the public sector. The Bangladesh Minister was requested that quantity-wise specifications of the requirements should be indicated to enable the Government at this end to ensure that the supply pattern conforms to the demand pattern. The Indian Minister referred to the gap between the price at which goods were exported from India and the price at which they were available to the consumer, and stated that if the commodities do not reach the consumer at a reasonable price, criticism is generated against the supplying country.

STEEL FOR EXPORTING UNITS

To ensure expeditious supply of adequate raw materials to exporting units, the Government of India have recently decided that priority allocation of steel be made to exporting units.

Import licences of steel materials are to be issued in the name of Hindustan Steel Ltd., with letters of authority in favour of exporters to expedite supplies. Exporting units can import their entitlements directly on the basis of the letter of authority, thereby avoiding possible delay. Orders placed on the foreign suppliers by the exporting units will, however, have to be registered with the canalising agency, HSL.

The Chief Controller of Imports and Exports, Ministry of Commerce, has issued a public notice on the subject of supply of imported steel for export production and the facilities available to manufacturers registered under the Engineering Export Promotion Council scheme for allocation of imported steel materials by Hindustan Steel Ltd. (HSL) at concessional price for meeting export orders. It has been decided that the scheme will now be available only in respect of export contracts where f.o.b. value of the exports is at least 25 per cent higher than the value (at c.i.f.) import price) of all steel materials required for the fabrication of the export products. This is irrespective of the fact whether the steel material is obtained from indigenous sources or imported.

The Hindustan Steel Ltd. is to determine whether an export contract will qualify in terms of the criteria now laid down on the basis of prices ruling in international markets at the time these contracts are brought for certification by the exporters. The Hindustan Steel Ltd., will give the certification within a week and the exporter will have to obtain this certification before registering the contracts with the Engineering Export Promotion Council or the Director General of Technical Development for grant of necessary facilities for supply of imported steel materials.

NDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

REVIEW OF MAN-MADE FIBRE INDUSTRY

Besides the progress achieved in the man-made ibre fabrics industry, India is well up in the manufacuring context of man-made fibres also. Three major ibres that have been receiving good attention are nylon ilament yarn, viscose filament yarn and viscose staple ibre. They are included in the priority sector of ndustrial development in the economy.

It is planned that the anticipated capacity and production by 1973-74 will meet, in full, the estimated damand for nylon filament yarn by that year. Presently, ve industrial units have a combined installed capacity f 14,000 tonnes per year. Over double the size of the nstalled capacity has been additionally approved ecently and it is hoped that by the end of the Fourth Five-Year Plan (1973-74) a total capacity of about 8,700 tonnes will materialise.

The production trend of nylon filament yarn ndicates a consistently rising graph. It has more than doubled since 1968 from 5435 tonnes to 11830 tonnes 1972). Imports of the fibre are restricted through the State Trading Corporation of India. No foreign collaboration will be allowed in this line of manufacture while schemes for further expansion of capacity would be considered on merits.

In view of the shortage of the material, its export is not encouraged but fibres made of nylon filament yarn are currently exported.

M/s. Gujarat State Fertilizers Company Limited are setting up a caprolactum plant with a licensed capacity of 20,000 tonnes per year. Till recently the entire requirements of finishing oil for the filament yarn industry was being imported from abroad. Now about 60 per cent of its requirements are being met from indigenous sources.

Viscose filament yarn is another line of priority in India's industrial development programmes. Eight manufacturers of the fibre have an installed capacity of 39100 tonnes. Their actual production in 1972 exceeded the capacity at 39915 tonnes. The estimated demand for the material is 60,000 tonnes by 1973-74 and by that time its production is anticipated to go up to the level of 64,000 tonnes. Among the raw materials required for this industry, sulphur, partly zinc and part requirements of rayon grade wood pulp are having to be imported, while caustic soda and part requirements of rayon grade wood pulp and zinc are available indigenously.

M/s. South India Viscose Limited have recently started the production of rayon grade wood pulp from eucalyptus with a licensed capacity of 22,500 tonnes per year, near Coimbatore. They use the pulp for the production of both, viscose filament yarn and staple fibre.

The third important fibre in the man-made textile industry is that of viscose staple fibre. The present installed capacity of this fibre is 82,000 tonnes. Its estimated demand by 1973-74 is 90,000 tonnes. The fibre's production was of the order of 70,335 tonnes in 1972. In view of the marginal gap between the current demand and production trends, imports of the fibre are allowed, but on a restricted basis, through the State Trading Corporation of India.

Of the raw materials needed for the manufacture of viscose staple fibre, rayon grade wood pulp partly and caustic soda are available indigenously and only sulphur and a limited quantity of zinc are imported.

FACTS ON DYESTUFFS INDUSTRY

Against an estimated demand of 15,000 tonnes by 1973-74, the total capacity licensed in the dyestuffs industry in India is of the order of 19,260 tonnes. The present installed capacity is a little over 18,880 tonnes. An additional capacity of 4970 tonnes has been recently approved.

With 21 private manufacturing units engaged in its production, the industry awaits larger expansion and diversification, its production has been recording a consistent improvement. From nearly of 7860 tonnes in 1967, it improved to 9870 tonnes in 1968, 11675 tonnes in 1969, 13400 tonnes in 1970 and 14500 tonnes in 1972.

Under the current industrial licensing policy followed by the Government of India, basic and azo (direct and acid) dyes are reserved for the small scale sector. Other groups are open for further licensing. Proposals for foreign collaboration in the new expansion schemes of the industry are to be considered on merits.

Under the current import policy, those dyestuffs which are produced in the country are not allowed for import to actual users and organic pigments not manufactured indigenously are allowed for import to actual users.

The value of imports stood at Rs. 37 million in 1971-72. In view of the surpluses available in certain varieties of dyestuffs, exports have been encouraged. The export value was merely Rs. 3 million in 1967-68 while it rose to Rs. 11.3 million in 1968-69, Rs. 13 million in 1969-70, Rs. 24 million in 1970-71 and Rs. 24.8 million in 1971-72. In the first three quarters of 1972-73 (April-December, 1972), the export value of synthetic dyestuffs, natural indigo and colour lakes totalled Rs. 37.55 million as against Rs. 15.35 million in the same period of the preceding year. Additionally, the export value of pigments, paints and related materials was Rs. 35.78 million against Rs. 22.54 million. Dyeing and tanning extracts, synthetic and tanning materials also improved at Rs. 1.5 million against Rs. 0.9 million.

Of the raw materials required for the production of dyestuffs, a wide variety is available indigenously. They include aceto acetanilide, aniline, O & P anisidines, anthraquinone, benzanthrone, cyanuric chloride, dimethyl-aniline, aceto acetic ester, [illegible] acid, betanaphthol, pyrazolones, naphthionic acid, phthalic anhydride, toluene, naphthalene, O & P toluidines, sulphuric acid, sulphanilic acid and nitric acid. Some of the items that are continued to be imported are benzidine, dianisidine, dinitrochloro benzene indigo, alpha naphthylamine, dichloro benzidine, mercury, sulphur, and sodium nitrate.

AERONAUTICS IN INDIA

The Aeronautical industry in India owes its origin and growth to the emergence of M/s. Hindustan Aeronautics Limited (HAL). Established originally for repairing and overhauling of aircrafts during the Second World War, HAL has now become a symbol of aeronautical age in the country.

HAL designs and fabricates a notable range of aircrafts, parts and components to cater to the needs of defence and aviation sectors of the economy. The Indian Air Force grew from stature to stature and now operates modern aircraft supported by a sizeable complex of training and maintenance units. All its trainer aircrafts and many operational aircrafts are made by HAL. These range from relatively small simple piston engined machines to supersonic jet fighters and 40 seater twin engined turbo planes.

The HAL's range of manufacture today includes Aircrafts - HF 24 'Marut' Mark I Supersonic fighter, HF 24 'Marut' Mark I trainer, HJT-16 'Kiron' basic jet trainer and HA 31 'Basant' agriculture aircraft. Besides, the HAL has to its credit the manufacture of HT 2 all metal trainer; the Pushpak Ultra light trainer and the Krishak AOP aircraft, an all piston engine aircraft. Howerer, the manufacture of these aircrafts has been discontinued to switchover to modern and sophistiticated aircrafts. With a view to equip the country in the manufacture of latest models of fighter and transport aircrafts and helicopters, HAL has entered into collaboration contracts with three advanced countries of the world namely, U.K., U.S.S.R. and France in recent years. It manufactures Gnat Transonic fighter in collaboration with U.K., HS 748 transport aircraft in collaboration with an another firm in U.K., Mig-21 supersonic intercepter in different versions in collaboration with U.S.S.R. and Alouette III helicopter in different versions and SA 315 'Cheetah' helicopter in collaboration with France.

Besides its main line of aircrafts production, it has to its credit the production of power plants - HJE - 2500 Turbo jet engine, HPE 2 six cylinder piston engine of 250 HP power rating, HPE 4 eight cylinder piston engine of 400 power rating. In this area of manufacture too, HAL has entered into technical collaboration with U. K., U.S.S.R. and France.

Besides, HAL also manufactures VHF communication equipment, automatic direction finders, radio alternators and radio beacons. Its product range in the line under foreign collaboration includes VHF radar, radio compass, radio altimeter (With U.S.S.R.) and other radar equipment (with Czechoslovakia and Italy). It also undertakes manufacture of a wide range of forgings and castings to aeronautical specifications both in light alloys and heat resistant steel at plants located at Bangalore and Koraput.

ATOMIC ENERGY

A REVIEW

The reactor No. 1 of the Rajasthan Atomic Power Station has attained criticality and the zero energy fast reactor, Purnima, at Trombay has been commissioned during 1972-73.

The first unit of the Rajasthan Atomic Power Project which became 'critical' in August, 1972, was synchronised into the Rajasthan Power Grid in November, 1972. The maximum power level reached was 50 MWe and the total power production upto February, 1973 was 5.1 million units. This unit is soon expected to reach full power.

The year 1972-73, witnessed the completion of the first refuelling of both the reactors at Tarapur Atomic Power Station since their commissioning, as well as of some intricate modifications to their internals. In addition, a major job on one of the main transformers was also completed and comprehensive efforts to contain and treat the radioactive effluents launched.

Civil works for the reactor, turbine and service building of the first unit of the Madras Atomic Power Project are nearing completion. The construction of the jetty has been completed while work on the intake structure and submarine tunnel is in progress. Construction of the pumphouse, water treatment building etc. has commenced. Mechanical erection works in the reactor vault have started. This unit is expected to reach criticality in July 1976.

The fourth nuclear power station will be located at Narora in Bulandshahr District, U.P. Initially two units of 235 MWe each would be constructed, with a provision for expanding its capacity by an additional 500 MWe. Station layout, estimates and project report have been prepared. Consultants have been appointed for engineering the conventional portion of the station like civil, steam systems, electrical systems, process and service systems. The civil works at site are expected to start by the end of 1974 or early 1975.

Besides, a Nuclear Research Centre is also being established at Srinagar. The Centre is intended to be an institute for research in the nuclear sciences with particular emphasis on the practical applications of nuclear methods which would result in economic benefits to the region.

To meet the requirements of heavy water for the nuclear power programme, another Heavy Water Plant at Talcher, Orissa, has been sanctioned. This is in addition to the three being set up at Kota, Baroda and Tuticorin.

By 1973-74, erection work of the plant at Kota will be in full swing and the plant will be on stream by the end of 1975. The Baroda Plant, based on the Ammonia-Hydrogen exchange process developed by a French consortium, is expected to go into production by the end of 1973. The plant at Tuticorin will be similar to the one at Baroda. Regarding the heavy water unit to be constructed at Talcher, an agreement was concluded with M/s. Friedrich Uhde, West Germany for the engineering and supply of equipment, machinery and material, and supervision of erection and commissioning.

The scope of activities of the Isotope Division of the Bhabha Atomic Research Centre (BARC), has increased in the field of production and application of radioisotopes. The scale value of radioisotopes, equipment and services rendered in 1972 totalled Rs. 4.36 million including Rs. 230,000 in export. Some 26,650 consignments of radioisotopes were despatched which included 18,280 consignments for medical use.

Radioisotopes, labelled compounds and equipment were exported to sixteen countries. Special mention may be made of the export of phosphorus-32 labelled fertiliser to Syria, Ghana and Brazil, one panoramic irradiator to Korea and one Gamma Chamber to Uruguay. Radiopharmaceuticals are new being regularly exported to Bangladesh.

The Radiation Medicine Centre of Bhabha Atomic Research Centre (BARC) provides up-to-date nuclear medicine techniques for diagnostic and therapeutic purposes. It had the unique distinction of being recognised as Regional Reference Centre for nuclear medicine by the World Health Organization in collaboration with the International Atomic Energy Agency. Beginning this year, this recognition would be valid for the next 5 years. During this period, the functions of the Centre would be collection and exchange of information on nuclear medicine procedures, promotion of radioisotopic techniques for routine use, advising hospitals and scientific institutions on the proper uses of radioisotope techniques and equipment and training in nuclear medicine etc.

CONCESSIONS TO INDUSTRIES IN SMALL SCALE SECTOR

The Import Policy for 1973-74 has been liberalised for licences of raw materials and components to actual users in the small scale sector engaged in the priority and non-priority industries.

The import entitlement of actual users in respect of non-ferrous metals and mild steel has been enhanced by 25 per cent for the period April 1973-March 1974, both in the case of priority and non priority industries.

Both for the priority and non-priority units, the unutilised value of licences for raw materials and components will be included in the c.i.f. value of consumption of imported raw materials and components for the purpose of calculating the entitlement of the unit for 1973-74. This relates to licences surrendered, in whole or in part, for import from rupee payment areas.

ROCK PHOSPHATE AS FERTILIZER

Certain experiments conducted at Agricultura Research Institutes in the country revealed that roc phosphate can be utilised straight as fertilizer in soils.

Of the total cultivable land in India, about fourth is acidic soil. If rock phosphate is used straight fertiliser, the country would be in a posi to save around Rs. 500 million annually in forei exchange by way of avoiding imports in the line. I would also help the country in reducing the wide g between demand and supply of fertilisers.

The country annually imports rock phosphate i sizeable quantities. During 1971-72, the imports totalle 797,795 tonnes valued at Rs. 105.67 million, Jordan, U.S.A , Morocco, Tunisia and Iran were the promi suppliers. The reserves of rock sulphate are located i the Mussorie basin and are estimated at about 2 million tonnes. The planned exploitation of phosphate in the basin has recently started. A r phosphate processing plant is also proposed to be up near Dehradun.

The production of pyrites at the Amjhore mines i also estimated to improve to 120,000 tonnes. A p to further increase the production up to 270,000 t is under active consideration. Besides, explora work at Saladipura, Rajasthan for mining pyrites manufacturing sulpharic acid, as a part of the fertiliser complex being set up in Rajasthan, is al progress. The estimated production of sulphuric of the proposed plant is to be of the order of 600 tonnes per annum and this would help the country save foreign exchange to the tune of Rs. 60 million.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

EPOXY GLASS COMMUTATOR

Epoxy glass commutator V rings for the traction machines have been recently developed manufactured by M/s. Heavy Electricals (I Limited (HEIL).

The electrical and mechanical designs of the nmutator are very closely inter-related and satisfac- y performance of the machines depends to a large ent on its commutator.

The material used consists of satinware glass cloth, ing a volan finish and impregnated with epoxy n. The resin content is about 43 per cent. The terial is cut into segmental shapes using a template the layers are staked together and inserted into pre-heated mould. All the raw materials required manufactured indigenously.

On conventional commutators of dc machines, ılating V Rings manufactured from shellac bonded anite are used. Although mica is one of the best ctrical insulators available, due to surface irregulari- a large variation in the mechanisation properties h the shellac content, bonding problems and varia- in thickness of micanite rings a very stable com- tator cannot be obtained, without resorting to eral seasoning cycles consisting of heating, overspeed- and tightening of commutator bolts.

Epoxy glass rings have the advantage of being re consistent to mechanical properties, since the terial is more homogenous and flexible than micanite, her the material allows closer control of the nufacturing tolerances, resulting in a finished product ing a very uniform surface and thickness.

TERMEDIATE FOR OXY RESINS

The National Chemical Laboratory (NCL), Poona, developed a process for the manufacture of henol-A starting from indigenously available raw terials. Bisphenol-A, is widely used as an inter- diate in the manufacture of epoxy resins and polycar- ates which in turn find application in the production surface coatings, structural plastics, adhesives etc. henol-A is also used as an antioxidant. At present henol-A is being manufactured by a few firms on ll scale, but indigenous production is reported to be und 300 tonnes p.a. as against an estimated demand 00-1000 tonnes p.a. There is thus scope for establish- additional units for the production of bisphenol-A he country.

The process developed by NCL consists of condensing phenol with acetone in presence of suitable catalysts. The process has been standardized on a pilot plant scale of 10 kg. per batch of the finished product. (The yield is 85 percent based on acetone.) The product is obtained in a clean white crystalline form and in a state of high purity (melting point 154°-155°) and passes the specifications for the product for use in epoxy resin manufacture. The product has been tested by some firms who have found it suitable for the manufacture of epoxy resins.

Phenol, acetone, sulphuric acid, other chemicals and catalyst are the main raw materials required for the manufacture of this product. All these are indigenously available.

Reaction kettle (lead-lined or glass lined) addition/washing vessels (MS/AI), centrifuge, dryer, micro-pulverizer, distillation units etc., are the major items of plant and machinery. All these are either indigenously available or can be fabricated easily in the country.

NCL has assumed a 300 tonnes per annum as an optimum size of the plant.

PROTECTION FROM EARTH FAULTS ON WINDING CIRCUITS

Recurring earth faults can cause damage to field system of alternators by short-circuiting the field wiring. A short circuit of this nature will no doubt be detected in an attended power station or at the machine fitted with vibration detectors. But if such short circuits are allowed to persist they can lead to the failure of the bearing pedestals and subsequent grinding of the rotor. It would, therefore, be useful to detect even the first earth fault on the winding and sound the alarm to alert the operation personnel.

M/s. English Electric Company of India Limited, Pallarawaram, Madras, have so far been using an imported type of rotor earth fault relay. Recently, they have introduced into their range two relays of indigenous sources which may be applied to all machines having a DC field voltage up to 450 V. The indigenous substitute provides for protection against earth faults on the entire field winding and associates circuits. The technical details of the relay developed by the firm can be obtained from them on request.

COMPOSITION OF INDIA'S EXPORT TRADE

(In Million Rupees)

Export Product	**1971-72**	**1971-72**	**1972-7**
		(April-December)	(April-Decembe
Fish and Fish Preparations	413.90	281.95	460.7
Meat and Meat Preparations	13.80	10.50	21.7
Cereal and Cereal Preparations	71.65	48.20	277.
Fruits and Vegetables	**703.50**	**581.00**	**658.8**
(a) Fresh Fruits and Nuts	634.70	527.90	594.7
(b) Fruits Preserved and Fruit Preparations	18.35	17.70	28.6
(c) Vegetables	32.70	21.00	21.7
Sugar and Preparations and Honey	309.50	276 30	102.2
Coffee	220.70	189.80	226.5
Tea and Mate	1563.10	1167.00	1201.6
Spices	361.75	231.25	176.6
Feeding Stuff for Animals	439 65	318.00	442.0
Unmanufactured Tobacco	422.45	349.60	502 0
Tobacco Manufactures	28 35	20.30	25.0
Textile Fibre and Waste	370.95	202 40	293.5
Metalliferous Ores and Metal Scraps	1210 35	841.65	916.1
Crude Animal and Vegetable Materials	471.20	349.60	365.7
Petroleum and Petroleum Products	68.60	52 50	82.6
Fixed Vegetables, Oils and Fats	71.60	36.50	149.2
Chemical Elements and Compounds	**72.30**	**52.25**	**63.0**
(a) Organic Chemicals	33.20	23.40	23.3
(b) Inorganic Chemicals	39.00	28 80	39.6
Dyeing, Tanning and Colouring Materials	54.50	38.80	74.8
Essential Oils and Perfume Materials	86.40	65.25	74.3
Leather and Leather Manufactures	907 65	641.50	1147.8
Rubber Manufactures	76.60	57.20	61.5
Paper and Manufactures	29 40	24.50	31.9
Textile Yarn, Fabrics and Related Products	**4260.70**	**3003 15**	**3424.8**
(a) Jute Manufactures (Excluding twist and yarn)	2632.90	1854.70	1904.7
(b) Cotton Manufacturers (Excluding yarn and thread)	1000.40	678.10	914.3
(c) Textile Yarn and Thread	280.35	191.00	278.3
(d) Floor Coverings and Tapestries	197.70	144.45	195.6
(e) Woven Textile Fabrics	135 95	105 00	115.6
Pearls, Precious and Semi-Precious Stones	515.15	371.65	550.2
Glass and Glassware	14.45	9.80	20.5
Iron and Steel	407.70	310 90	298.0
Non-Ferrous Metals	79.80	58 00	63.7
Metal Manufactures	236.60	194.60	251.9
Machinery other than Electric	241.60	185 65	225.5
Electrical Machinery, Apparatus and Appliances	186.75	146 20	182.7
Machinery and Transport Equipment	**279.80**	**192.95**	**209.5**
(a) Railway Vehicles	69.40	56 00	28.3
(b) Road Motor Vehicles	119.80	79 60	98.2
(c) Road Vehicles other than Motor Vehicles	73.20	56.60	81.6
Clothing	350.55	245.10	402.5
Footwear	117.60	82.10	93.1
Scientific, Medical, Optical, Measuring and Controlling Instruments and Apparatus	16.50	52.70	62.3
Developed Cinematographic Films	50.15	40.10	38.5
Total including other items (excluding re-exports and exports made to Bangladesh during the period under review of 1972-73).	**15635.45**	**11365.75**	**13903.5**

Source : Director General of Commercial Intelligence and Statistics, Calcutta.

N FOOD PROCESSING INDUSTRIES

The current industrial licensing policy of the vernment of India is to encourage further expansion production capacity in the food processing industries, cording to the Directorate General of Technical velopment, Ministry of Industrial Development. The cific industries that will be eligible for liberal licensing atment are those manufacturing baby food, canned ds (fruits and vegetables), malted milk food, milk wder, and weaning and protein foods.

The baby food manufacturing industry has a ensed capacity of about 21,000 tonnes at present. stalled capacity is nearly 19,000 tonnes. Additional pacity of about 16,400 tonnes has been recently proved. The total capacity likely to materialise by e end of 1973-74 has been placed at 32 000 tonnes d by that year the estimated domestic demand will 30,000 tonnes. There are six manufacturing units this line, three of which have the facility of foreign laboration.

Production of baby food has witnessed sizeable provement in recent years. It was 11,830 tonnes in 68, 15,675 tonnes in 1970 and 19,850 tonnes in 1972. hile expansion schemes for the production of the m will be encouraged, no foreign collaboration is to allowed at present. Import of baby food is also t allowed. Exports before 1970-71 were negligible t recently during 1972-73 they materialised to ngladesh to the tune of Rs. 4 million. Excepting mmed milk powder, all the raw materials are availa- e indigenously and they include fluid milk, sugar, amins and packing materials like tin containers. ne import of skimmed milk powder will also be stricted, once indigenous production is fully ablished.

The combined capacity for processed fruits and getables is in the range of 78,110 tonnes per year. is expected that the installed capacity will improve 89,000 tonnes by 1973-74. Actual production in 72 was 30,000 tonnes against 22,310 tonnes in 1971 d 23,310 tonnes in 1970. While foreign collabora- on in this line of manufacture is not necessary, oposals for further expansion of indigenous capacity e being considered on merits. No imports are lowed. The product has entered the export trade d earned foreign exchange worth Rs.17.5 million in 1971-72; except citric acid, no raw materials need to be imported.

The malted milk food industry has almost reached the full capacity utilisation point in 1971 at about 14,860 tonnes. Additional capacity at 7,700 tonnes has been recently approved and the total capacity likely to materialise by the end of 1973-74 has been placed at 18,560 tonnes. As in the case of canned fruits and vegetables, malted milk food also does not require any foreign collaboration and plans for further capacity expansion are being considered on merits. No import of the milk food also is allowed.

As for milk powder, about 12,000 tonnes of output was recorded in 1972 against an installed capacity of 18,250 tonnes. The estimated demand by 1973-74 has been placed at 45,000 tonnes by which year the installed capacity is likely to improve to about 32,000 tonnes. In this industry also, neither foreign collaboration is allowed nor foreign investment is considered necessary. In view of the present shortfall in domestic production as compared with the present demand, limited quantities of milk powder are being permitted for import. These imports are canalised through the National Dairy Development Board. The percentage utilisation of the existing units–three in public sector and nine in private sector–works out to 70. The limiting factor to attain full utilisation of the capacity is the availability of fluid milk, which is the major raw material required. The public sector units engaged in its production are M/s. Kaira District Cooperative Milk Producers Union Limited, Anand (Gujarat), M/s. Haryana Milk Foods, Pehowa and M/s Punjab Dairy Development Corporation, Amritsar.

The Weaning and Protein foods industry is another area where plans for further capacity expansion would be considered on merits although foreign collaboration is not permitted. The weaning section has a licensed and installed capacity of 1,105 tonnes and the protein foods industry has a capacity of 5,500 tonnes. Recently about 6,000 tonnes of additional capacity for weaning sector and 5,350 tonnes for the protein sector have been approved. The capacity which is expected to materialise by 1973-74 will be 7,105 tonnes for the weaning sector and 15,450 tonnes for the protein sector. The estimated demand for the weaning food industry is 20,000 tonnes by 1973-74 while no estimates have yet been made for the protein sector. Actual production in 1972 was of the order of 1,005 tonnes for weaning

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food and 218 tonnes for protein foods. Most of the raw materials required for these industries are available indigenously and they include edible groundnuts, soyabeans, legumes, cotton seed and other protein bearing materials. The weaning and protein foods are important items of development linked with the nutrition programme in the country and as such all encouragement is being given to stimulate their growth.

The processed foods industry has also contributed to India's export earnings. The major products that are active on export front are dairy products and preserved fruits and vegetables, not to mention meat and preparations, fish and preparations, cereals and preparations, sugar and confectionery and processed edible nuts.

In the dairy products group which earned Rs. 2 million in 1971-72, milk and cream was exported to the tune of Rs. 322,800 and butter Rs. 1.72 million. Nepal and Bahrein Islands were the principal buyers. Of the group of preserved fruits and preparations, which was exported in the year to secure Rs. 18 35 million, the share of jams, marmelades and jelleys amounted to Rs. 1.20 million. Kuwait, U.K., U.S.S.R. and German Federal Republic were the leading importers. Mango juice exports fetched Rs. 12.52 million, mainly from U.S.S.R., South Yemen People's Republic, Saudi Arabia, Kuwait and Bahrein Islands. Juices from other fruits earned over Rs. 1 million. Temporarily preserved fruits secured Rs. 1.85 million of which mango slice brine alone accounted for Rs. 1.36 million (U.K. absorbed worth Rs. 1.29 million). Fruits preserved in syrup were also exported to the tune of Rs. 1.20 million. Of preserved vegetable preparations, mango chutney pickles earned Rs. 6.50 million. U.K. alone absorbed worth Rs. 2.1 million. Kuwait, U.S.A., Iraq, Netherlands and German Federal Republic were among other customers. ☐

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EGLER CATALYST
AUSTRALIA

The first ever consignment of aluminium organic
npound (ziegler catalyst) has been exported to
stralia. The exporter, M/s. Polyolefins Industries
nited, Neville House, Currimbhoy Road, Ballard
ate, Bombay, has an annual installed capacity at
,000 kg. of this item. The firm is the only producer
high density polythylene in India with an installed
acity of 20,000 tonnes. Also it has capacity to manu-
ture 18,000 tonnes of processed polythylene products.

The company has manufactured 18,500 tonnes of
h density polythylene and 137 tonnes of ziegler
alyst in the year 1971.

While the firm has effected the export of ziegler
alyst for the first time, it has already made a success-
entry into the export field of processed products.
exports of woven sacks made of 'Hostalen' were
rth Rs. 440,000 in 1971. The company which has
hnical and financial collaboration agreement with
's. Hoechst of West Germany have been recently
accorded an approval to raise the capacity for high density polythylene by an additional 10,000 tonnes per year. It is expected that they will have installed the full licensed capacity of 30,000 tonnes by the end of 1973-74.

For the production of high density polythylene, all the important raw materials are available indigenously excepting N-butene. About 98 per cent of their raw materials supply is from indigenous source. Even for the production of N-butene, they are taking necessary steps to implement a project in the near future.

While the company is the only manufacturer so far of high density polythylene in India, there are two firms engaged in the production of low density of polythylene. They are M/s. Union Carbide India Limited, Bombay and M/s. Alkali Chemical Corporation of India Limited, Calcutta. The present installed capacity of the LD polythylene is 19,000 tonnes but an additional 80,000 tonnes worth of capacity has already been approved. In 1972, the output of this product was nearly 28,000 tonnes. The Naphtha feedstock or ethyl alcohol which is the main raw material for LD polythylene is available within the country, although catalysts and special chemicals required in its manufacture are currently allowed to be imported.

COMBUSTION ENGINE EXPORTS ON SHARP INCREASE

India's power generating machinery sector is making rapid strides. With a modest foreign exchange earning in 1968-69 at Rs. 29.45 million, the industry improved its exports to Rs. 38.40 million in 1969-70. The exports further rose to Rs. 54.30 million in 1970-71 and to Rs. 55.20 million in 1971-72. Interestingly, during the first three quarters of 1972-73, (April-December 72), the exports shot up to nearly Rs. 74 million, registering a sharp increase over the export value of the entire preceding year. During 1971-72, a wide variety of items such as internal combustion engines (other than for aircrafts) in various ranges and parts, steam generating boilers and parts, boiler house plants and aircraft engines was supplied to a large number of countries. Federal Republic of Germany, Malaysia, Iran, Saudi Arabia, Thailand, Sudan, Iraq, Netherlands, Nigeria, Vietnam Republic, Afghanistan, Yugoslavia and U.K. were the leading buyers.

During the first three quarters of 1972-73, internal combustion engines and parts fetched Rs. 65.50 million, steam generating boilers and parts Rs. 4 million and aircraft engines Rs. 3.10 million. Bangladesh, Federal Republic of Germany, Syria, Iran, Iraq, Thailand, Saudi Arabia and Libya were the prominent destinations.

M/s. Kirloskar Cummins Limited, Kothrud, Poona-4, manufactures and exports internal combustion engines of all types in the range of 60 to 800 HP and diesel engines for powering earth moving machinery such as bull dozers, tractors, shovels, dumpers, barges (marine engines), generator sets, rail cars and shuttlers. The firm has to its credit an export performance of Rs. 6 million during the year ended September 1972. The firm's export turnover improved by Rs. 1 million as compared to its export value at about Rs. 5 million in the preceding year.

The Poona firm's marine diesel engines are particularly popular in Arab Republic of Egypt, Sri Lanka and East European markets.

The firm has recently taken up the manufacture of a new series of engines raising the maximum horsepower to 800. The indigenous content of the engines ranges between 70 to 98 per cent varying on different mode Its value of production during the year amounted Rs 85.20 million.

India's total production of stationary diesel engin was of the order of Rs. 260 million (82,750 number in 1971. The output of heavy duty diesel engines Rs. 62 million (890 numbers).

TELECOMMUNICATION EQUIPMENT ON EXPORT FRONT

India's progress in the manufacture of telecommun cation apparatus is well recognised in the world market Exports in the line are growing from year to year– Rs. 14 million in 1968-69, Rs. 22.80 million in 1969-7

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Rs. 27 million in 1970-71 and nearly Rs. 30 million n 1971-72. Even during the first three quarters of 1972-73, (April-December 72), the exports fetched Rs. 22.50 million.

India offers a wide range of telecommunication equipment including television receivers, domestic radio receivers, transistor radio receiver sets, telegraph apparatus, telephone equipment and parts, microphones, loudspeakers, radio loudspeakers, amplifiers, microphone parts, wireless reception with transmitting apparatus, transmission reception apparatus and parts and wireless reception apparatus and parts. In the long ist of buyers during 1972-73, Iraq, Kuwait, Arab Republic of Egypt, U.K., Sudan, Nigeria, U.S.S.R. and Bulgaria were the leading destinations.

M/s. Philips India Ltd., Philips House, 7, Justice Chandra Madhab Road, Calcutta-20, executed export orders worth Rs. 10.4 million during 1972. The firm exported radios, electronic components, lighting fittings and accessories and other telecommunication equipment and parts. The present and potential products range of the Calcutta firm covers lighting products, radios, radio components, electronic measuring and quality control equipment, scientific instruments, electro-accoustic and telecommunication equipment and welding electrodes.

The firm's new plant set up at Bhosari Industrial Estate, near Poona, (Maharashtra) manufactures radios. Its another plant at Loni near Poona manufactures standard and professional electronic components. Its factory at Calcutta manufactures lighting fittings and accessories and radio receivers and components. Besides, the Calcutta plant also undertakes manufacture of trans-receiver, a highly sophisticated modern instrument for the armed forces.

During 1972, the firm added a new product to its range - record players, by commencing their production at its Calcutta factory. A unit of its factory, located at Bombay is engaged in the manufacture of electronic measuring apparatus catering to the requirements of a large number of establishments, such as industrial units, technical institutions, research laboratories and service establishments. The firm is presently setting up a welding electrodes manufacturing plant at Kalwa, Thana District (near Bombay), Maharashtra.

POWER CABLES TO WORLD MARKETS

In the broad spectrum of India's engineering industries, the cables and wires industry occupies an important place. Alongside the progress in production, its success in export field is noteworthy. As against Rs. 110 million worth in 1969-70, cable exports were Rs. 113 million in 1970-71. During 1971-72, the exports amounted to Rs. 105 million.

Insulating wires and cables constitute the major category of exports, followed by bare aluminium and copper conductors. The leading markets for insulated wires and cables include USSR, Iran, Sri Lanka, Qatar, Federal Republic of Germany and Australia while USSR, Arab Republic of Egypt, Sudan, Iran, Tanzania Republic, Kuwait and Thailand are among the prominent destinations for bare aluminium conductors. Iran, Kuwait, Singapore and Hong Kong are the major buyers for bare copper conductors.

M/s. Industrial Cables (India) Limited, Rajpura, District Patiala (Punjab), exported power cables and conductors to the tune of over Rs. 13.70 million in the year ended October 1972. The firm exports to West and East Asian and East European countries. Among the markets in East Europe, their products are mainly sought by U.S.S.R.

The firm is engaged in the manufacture of PILC power cables, PVC cables and AAC and ACSR conductors. The firm is also setting up a steel wire manufacturing plant in Jind District of Haryana State. It has plans to diversify its product range by taking up the manufacture of grooved contact wire (trolly wire) and high voltage polythelene cables as also to set up a continuous casting mill for aluminium rods.

India's total output of power cables in 1972 was as follows : VIR/PVC cables 625.20 million cubic yards; ACSR and ACC conductors 86,000 tonnes; enamelled winding wires 14000 tonnes; paper covered winding wires 6500 tonnes; dry core cables 2500 kilometres; coaxial cables 500 kilometres and bare copper conductors 500 tonnes.

AUTOMOTIVE TYRES AND TUBES ON EXPORT STREAM

India's exports of rubber tyres and tubes earned foreign exchange at a value of Rs. 44.20 million during the first three quarters of 1972-73 (April-December 1972). In the entire preceding year (1971-72), the exports amounted to Rs. 70 million.

During April-December 1972, a large variety of tyres such as cycle tyres, motor car tyres, motor cycle tyres, tyres for off-the-road vehicles, tractor tyres, tyres for trucks, buses and other vehicles were mainly supplied to Yugoslavia, Korea Democratic Republic, Iraq, Sudan, Kuwait, Arab Republic of Egypt and Czechoslovakia. Besides, cycle tubes, motor car tubes, motor cycle tubes, tubes for off-the-road vehicles, tubes for tractors, trucks and buses and tubes for other vehicles were mainly bought by Yugoslavia, Czechoslovakia, Kuwait, U.S.A., Korea Democratic Republic, Afghanistan, Austria, Sudan and Iraq.

M/s. Ceat Tyres of India Limited, Bhandup, Bombay-78, one of the firms engaged in the line, exported rubber tyres and inner tubes to the tune of Rs. 26.80 million during 1972. The exports were effected to a large number of markets in Africa, West Asia, U.S.S.R., Yugoslavia and United Kingdom. The firm has been awarded the Chemicals and Allied Products Export Promotion Council's export award for outstanding export performance.

The Bombay firm is engaged in the manufacture of all kinds, of rubber tyres and tubes. Its production of automotive tyres was 829,000 numbers and that of automotive tubes was 718,000 numbers in 1972. Its bicycle tyre plant at Nasik, Maharashtra started trial production in February 1973. The firm is to soon start the manufacture of off-the-road vehicle tyres also at the rate of 2000 numbers a year.

As against an installed capacity of 2.20 million numbers, the production of 8 units in the organised sector was estimated at 2.40 million numbers for giant tyres and that of giant tubes was 2.30 million numbers in 1972.

The figures of installed capacity, estimated production and the number of units engaged in the production of other tyres and tubes in 1972 were : 1 million numbers, 1.30 million numbers and 8 units in respect of motor tyres; 1 million numbers, 1.4 million numbers and 8 units for motor tubes; 200,000 numbers, 150,000 numbers and 5 units for motor cycle tyres; 200,000 numbers, 225,000 numbers and 5 units for motor cycle tubes; 450,000 numbers, 500,000 numbers and 8 units for scooter tyres; 450,000 numbers, 380,000 numbers and 6 units for scooter tubes; 31.83 million numbers, 22.40 million numbers and 15 units for bicycle tyres; 28.95 million numbers, 14.60 million numbers and 16 units for bicycle tubes; 160,000 numbers, 275,000 numbers and 6 units for tractor tyres and 165,000 numbers; 240,000 numbers and 5 units for tractor tubes.

Besides, Aero tyres (17,000 numbers), Aero tubes (2000 numbers), ADV tyres (250,000 numbers), ADV tubes (250,000 numbers), off-the-road tyres (16,000 numbers) off-the-road tubes (13,000 numbers) and cab tyres (7000 numbers) were produced during the year.

EXPORT ORDER FOR DRUGS TO SOVIET UNION

The first batch of drugs to be exported to U.S.S.R. under an order of the value of Rs. 10.8 million placed on an Indian firm has been recently handed over to the Charge-de-Affairs of the Soviet Embassy in India by India's Commerce Minister, Prof. D.P. Chattopadhyaya. This token presentation marked the first shipment of drug exports to that country.

From a meagre level of Rs. 7.5 million worth exported in 1968-69, the foreign exchange earning of medicinal and pharmaceutical products reached a level of Rs. 87 million in 1971-72. In the first three quarters of 1972-73, the export value of medicinal and pharmaceutical products totalled nearly Rs. 69 million.

U.S.S.R., the largest trading partner in India's export trade in 1971-72, absorbed Indian goods worth Rs. 2087 million while in the first three quarters of 1972-73 it purchased as much as Rs. 2269 million. The two way trade traffic between the two countries has been growing on a consistently rapid pace. There has been an encouraging diversification in the offtake of Indian goods by the Soviet Union in recent years. With the completion of the export deal in drugs, and nore highly non-traditional commodity has been added o the list of India's exports to that country. This ingle order of such a high value is an indicator of the onfidence which the Soviet Union have shown in ndia's ability to export drugs. It is hoped that this rder will be the fore-runner of a chain of fresh export rders to U.S.S.R. in the coming years.

EXPORT PERFORMANCE AND POTENTIAL

CEREAL PREPARATIONS AND EXPORT TRADE

A wide variety of cereal preparations is active on India's export front. The major export products are corn flakes, biscuits and papads. The export value of cereal preparations was of the order of Rs. 11.33 million during 1971-72. Even in the first nine months of 1972-73, the offtake amounted to Rs. 10.28 million.

Bakery products secured as much as Rs. 4.6 million n 1971-72. Biscuits constituted the most important product of export in this category. Nepal absorbed as much as Rs. 3.18 million (0.86 million kg.) out of he total biscuits exported at Rs. 4.6 million (1.2 million kg.). Bahrein Islands, Dubai, Hong Kong, Abu Dhabi, Muscat and Qatar were the other important customers.

Puffed rice corn flakes earned Rs. 0.64 million in 1971-72, Sudan and the U.K. together absorbed about half of the total export value. Among other importers were Yugoslavia, U.S.A., Zambia, Malawi and Maldive Islands.

Singapore imported over 0.25 million kg. worth of malt extracts at a value of Rs. 0.5 million during 1971-72. In the same year, papad exports secured Rs. 4.3 million. Indian papads have become particularly popular abroad in recent years. In 1971-72, as many as 50 countries bought this item. The most important customer was the U.K. at Rs. 2.10 million. Next in importance were Nepal, Singapore, Australia, Fiji Islands, Kuwait and U.S A.

Among other products of export importance in the cereal preparation group are macroni spaghetti noodles, pastries, patent foods, malted milk and sealing wafers.

The production pattern of these products makes an interesting study. Grain and wheat flakes have an installed capacity of 900 tonnes a year of which more than one third of the capacity was produced during 1972. Over 30 firms in the organised sector manufacture biscuits with an installed capacity of 94,200 tonnes every year. In 1972, the biscuit production was of the order of 69,000 tonnes.

Confectionery is another line of production progress. Its output was 18,000 tonnes in 1972 in which year the actual installed capacity in the organized sector was of the order of 37,000 tonnes. Processed barley and oats constitute other examples which receive importance in the country's food processing industry.

The export value of cereals and preparations in 1971-72 totalled Rs. 71.7 million of which rice export was of the order of Rs. 19.3 million, pulses Rs. 37 million and meal and flour Rs. 6 million. In the first three quarters of 1972-73, the export trade in cereals and cereal preparations shot up to Rs. 277.4 million. This substantial rise was mainly due to the improvement in the offtake of wheat at Rs. 224 million in the first three quarters of 1972-73 as against Rs. 0.6m illion in the same period of the preceding year. Rice exports which fetched Rs. 19.3 million in 1971-72 totalled Rs. 17.4 million in the first three quarters of 1972-73. In this period, pulses export stood at Rs. 24.54 million.

MEDICAL INSTRUMENTS FOR EXPORT

In the novel class of India's export trade, medical instruments have come to assume importance. In the export range, surgical forceps and clips, surgical knives and scissors, anaesthetic equipment, surgical suture needles, medical, dental and surgical instruments and electro-medical equipment figure prominently.

During 1971-72, the export value of medical instruments totalled Rs. 6.62 million. Additionally, the export of electric apparatus for medical purposes secured foreign exchange worth Rs. 0.87 million. Kuwait was the principal importer of anaesthetic equipment. Surgical forceps and clips were mainly bought by the U.S.S.R. This country absorbed as much as Rs. 2.47 million out of the total export value of this product at Rs. 2.54 million. Nigeria imported the best part of surgical suture needles during the year. Besides these prominent items, the Indian industry was also able to export blood pressure instruments, hollow needles of injections, stethoscopes, surgical knives and scissors and machino-therapy appliances. Besides, X-ray apparatus was mainly exported to Japan and Philippines.

In the first three quarters of 1972-73, medical instruments fetched Rs. 6.40 million while electric apparatus for medical purposes secured Rs. 0.5 million.

EXPORT PERFORMANCE OF SYNTHETIC DETERGENTS

Soviet Union is the best market for India's synthetic detergents. Next in importance are South Yemen People's Republic and Yugoslavia. The foreign exchange earned through these exports totalled Rs. 8.35 million during 1971-72. Quantitywise, the exports were of the order of 3.38 million kg. Of this, the Soviet Union absorbed worth Rs. 7.26 million (2.9 million kg). The South Yemen People's Republic imported worth Rs. 0.54 million and Yugoslavia Rs. 0.26 million. In the first three quarters of 1972-73, these exports totalled Rs. 5.78 million of which, U.S.S.R. absorbed worth Rs. 5.46 million.

The total export value of surface acting agents and washing preparations was in the neighbourhood of Rs. 15.2 million in 1971-72 and Rs. 11.3 million in the first three quarters of 1972-73. Besides synthetic detergents, the major products active in export market have been abrasives, polish compositions for application on leather and metals.

The synthetic detergents industry in India has a licensed capacity of 105,700 tonnes. Its installed capacity now is in the neighbourhood of 56,000 tonnes. Actual production in 1972 totalled 63,000 tonnes. In view of the sufficient turnover, its imports are banned currently. Foreign collaboration is not allowed in future proposals for capacity expansion. Among five private units active in this line of manufacture, M/s. Hindustan Lever Limited have collaboration with M/s. Unilever Limited of the United Kingdom.

Excepting alkyl benzene/dodecyl benzene, most of the raw materials required for the manufacture of synthetic detergents are available within the country in sufficient quantity. These materials include sodium tri-polyphosphate, sodium sulphate, caustic soda, oleum and sodium silicate. Even the import content of alkyl benzene is not more than 5 per cent of the ex-factory value of total production of synthetic detergents in the country. The import content as a percentage of FOB value of exports is less than 10 per cent.

Synthetic detergents mark a comparatively new product group intròduced in India as a washing material. It is creditable that this product has been able to withstand the competition from laundry soap particularly in the export market as the latter is available at comparatively less expensive prices.

While the present requirements of alkyl benzene are allowed to be met from imports, the production of this item is to be undertaken by M/s. Indian Petrochemicals Limited, a public sector undertaking, at Koyali (near Baroda). The Koyali project is to be implemented within a few years.

EXPORT POTENTIAL FOR ENGINEERING GOODS IN PERU

A recent visit of a trade delegation organised by the Engineering Export Promotion Council to Peru has revealed that a vast scope awaits India's engineering product exports, including the establishment of joint ventures. The specific lines of manufacture are sugar mill machinery, textile and cement machinery, steel structurals, heavy boilers and ceramic insulators. Peruvian Government, private industry and public corporations evinced keen interest in India-manufactured engineering goods.

A leading English language daily in Lima brought out a special supplement on Indian engineering industries, mentioning that although India's trade with Latin America was still at a low ebb, there were definite long-term prospects for the two countries to forge closer commercial ties.

India's total exports to the Latin American region nounted to Rs. 83 million in 1971-72. Of this, the ports to Peru were of the order of Rs. 4.78 million counting for nearly 6 per cent of the total exports to t region. During the year, India's supplies of gineering goods included handtools and smalltools, cycles and parts, oil pressure lamps, mathematical truments, wire ropes and other items in the line. cording to Engineering Export Promotion Council, alcutta), the Latin American market absorbed . 1.30 million worth of engineering products in 71-72 and nearly Rs. 2 million worth in the first ree quarters of 1972-73. Peru's share in the engiering exports from India was valued at Rs. 460,000 1971-72 and Rs. 594,000 in the first nine months of e subsequent year.

XPORT BOOST IN CLOTHING

India-manufactured clothing is receiving growing pularity in overseas markets. During the first nine onths of 1972-73 (April-December, 72) the foreign change earning in the line amounted Rs. 402.30 llion, registering a sharp increase over Rs. 245 llion earned during the corresponding period of the eceding year.

In 1971-72, the exports of clothing were of the der of Rs. 350.50 milion as against Rs. 302 million 1970-71.

Textile fabric clothing (not knitted or crocheted) nstituted the leading group which earned Rs. 230.35 illion. A wide variety of items including cotton shirts, cotton dress shirts, cotton dresses for girls, tton blouses, cotton outer garments for men, cotton ousers for men and boys, silk outer garments for men, tton trousers and play suits for girls, silk outer garent for women, cotton undershirts and silk underwears r men and boys, other textile fibre undergarments r men, cotton nightwear and pyjamas for men, other xtile dresses for girls, manmade fibre dresses for girls, tton dressing gowns for girls, outer garments made other textile fabrics for men and boys, outer garments wool for men and cotton coats were supplied abroad. .S.S.R., U.S.A., U.K., Sweden, France, Federal epublic of Germany, Netherlands, Australia, Canada, Japan, Denmark, Italy, Norway, and Burma were the leading buyers.

The next best area of sizeable export earning in the same category was clothing and accessories (knitted or crocheted) which brought in Rs. 139.65 million. The important items that were active in exports were wool sweaters and cardigans (Rs. 132.85 million), cotton gengis, cotton stockings and other cotton under garments. U.S.S.R., Poland, Czechoslovakia, Hungary, Libya, Nepal, Italy and Canada were the significant markets. Textile fabrics clothing accessories (not knitted) was yet one more group active in exports which netted Rs. 29.30 million. Handkerchiefs, silk shawl scarves, zari embroidered silk shawl, ties, bow ties, cotton brassiers, cotton clothing accessories, gloves and socks, wool shawls, wool scarves, cotton chadder and other handprinted odhanis were mainly supplied to USSR, USA, Ethiopia, Bangladesh, France, Federal Republic of Germany and Nepal.

Besides, headgears, leather apparel and clothing accessories of rubber were active in exports.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

HEAVY ENGINEERING UNITS IN PUBLIC SECTOR

Large sums of public investment have been directed into the setting up of a chain of heavy engineering units in India, among which the Heavy Engineering Corporation Limited, Ranchi, the Mining and Allied Machinery Corporation Limited, Durgapur, Triveni Structurals Limited, Allahabad, Bharat Heavy Plates and Vessels Limited, Visakhapatnam and Tungabhadra Steel Projects Limited, Tungabhadra Dam are important.

The Heavy Engineering Corporation Limited has three engineering plants : a Heavy Machine Building Plant with an installed capacity to manufacture 80,000 tonnes of heavy machinery and 25,000 tonnes of structurals every year; a Foundry Forge Plant with an installed capacity of 180,000 tonnes of gross production per year and a Heavy Machine Tools Plant with an installed capacity to manufacture 278 machine tools (weighing 10,000 tonnes) every year. The total investment in the company is currently in the range of Rs. 2645 million. In 1971-72, the output of the Foundry Forge Plant was nearly worth Rs. 93 million (21000 tonnes) while that of the Heavy Machine Building Plant was worth Rs. 273 million (30,470 tonnes) and Heavy Machine Tools Plant Rs. 12.6 million (20 numbers of 740 tonnes). The Foundry Forge Plant was set up to meet the requirements of castings and forgings of the Heavy Machine Building Plant and Heavy Machine Tools Plant. The Heavy Machine Building Plant is designed to manufacture various heavy machinery items including equipment required for coke oven blast furnaces, steel melting, crushing and grinding, rolling mills, cranes, excavators and heavy oil drilling rigs. The Heavy Machine Tools Plant is designed to manufacture tools including centre lathes, radial drilling machines, horizontal boring and turning mills, plano milling machines and cylindrical and roll grinding machines.

The Mining and Allied Machinery Corporation Limited is designed to produce various items of mining equipment like conveyors, coal cutters, mine locomotives, fans, pumps and loaders. The installed capacity of this plant is 45,000 tonnes per year. Actual production in 1971-72 was about 12,000 tonnes valued at Rs. 102 million. Production in 1972-73 was estimated at 15,700 tonnes at a value of Rs. 125 million. The plant witnessed considerable product diversification in recent years including the manufacture of equipment for bulk handling of raw materials and ports, coal washing and mineral dressing equipment, roof support for mines, special conveyors and pumps for steel plants, castings and forgings and gear boxes. The diversification attempted by the Corporation resulted in the manufacture of equipment that was hitherto imported. The value of import substitution effected by the Corporation rose from the modest figure of Rs. 65,000 in 1965-66 to Rs. 4.4 million in 1971-72 It is likely that the foreign exchange saving on account of import substitution by 1972-73 will be in the range of Rs. 30 million.

M/s. Triveni Structurals Limited covers in its manufacturing range a variety of structurals including steel building structures, hydraulic gates, penstocks, storage tanks, pressure vessels and steel bridges and heavy duty cranes. The estimated production of the plant during 1972-73 was 10,500 tonnes. The installed capacity of the plant is about 25,000 tonnes per year.

The profile of manufacture at M/s. Bharat Heavy Plates and Vessels Ltd., Visakhapatnam covers heat exchangers, pressure vessels, digesters, col technological structurals required by fertilizer, chemi and petro-chemical industries and storage vessels. The installed capacity of the plant is approximately 23,0 tonnes per year. The plant was completed in mid 1971 and trial production commenced as far back as Ju 1969. During 1971-72, the quantum of production at the plant was 2475 tonnes while in the first ten months of 1972-73 the output rose to over 3900 tonnes. The plant has entered into collaboration agreement with M/s. Air Liquide of France for the production of air and gas separation plants and with an American firm for the manufacture of multilayer vessels. The former collaboration arrangement is to enable the company to offer on a turnkey basis complete air and gas separation plants required for the processing industries. The American collaboration is to provide know-how for the production of high pressure multilayered vessels required for synthesis of ammonia urea, methanol and other organic products. The company is taking steps towards further product diversification. It has plans to manufacture electrostatic precipitators and forged high pressure valves and tonne containers for chlorine, sulphur dioxide.

In adddition to the above mentioned public sector projects engaged in the manufacture of heavy engineering products, a consortium of selected public sector undertakings was constituted to organise business connected with the supply of equipment for steel plants, mines, fertilizer factories and other industrial projects by entering into contracts for design, manufacture, inspection, supply, erection and commissioning equipment on a turnkey basis This consort M/s. Engineering Projects (India) Limited New De secured since its inception a number of high contracts which were valued at Rs. 330 million, at the beginning of the current year (1973). The orders sec included Kandla Fertilizer Handling Project, D Coke Oven Project Raw Material Handling Plant Bhilai and Coal and Ash Handling Plant for S Electricity Boards. It has also submitted tenders a number of projects abroad on a turnkey basis. instance, it sumitted a tender in collaboration w

/s. Oil India Limited for setting up a compressor tion and laying a pipeline in Indonesia. They have o submitted a tender in February 1973 for the setting a semi-integrated steel plant in Iraq. Currently, ey are negotiating a collaboration arrangment with West German firm for the manufacture of electric : and reduction furnaces of 20 to 100 tonnes capa-ies in India.

APACITY EXPANSION OF NDUSTRIAL GASES

Under the current industrial licensing policy of the overnment of India, proposals for capacity expansion r certain industrial gases are to receive favourable eatment, according to the Directorate General of echnical Development, Ministry of Industrial Develop-ent. The specific industrial gases for which such a eatment will be available are argon gas, carbon oxide, dissolved acetylene, hydrogen, nitrous oxide, ygen and liquid chlorine.

Included in the priority sector of industrial evelopment, the installed capacity of argon gas is 0.5 illion cubic metres. Actual production in 1971 was 29,500 cubic metres. While no foreign collaboration ill be allowed in any future proposal for capacity xpansion for this gas, licensing for capacity expansion ill be considered on merits of individual proposals. s the demand for argon gas has shot up in recent years India, the import of spectroscopically pure argon as is allowed. No raw material needs, however, to be nported.

While the estimated demand for carbon dioxide by 973-74 is 13,000 tonnes, the current installed capacity s about 18,000 tonnes. The total capacity likely to aterialise by the end of 1973-74 is estimated at about 0,000 tonnes. Actual production in 1971 was about 0,500 tonnes. The Goverment of India encourages urther licensing of capacity for carbon dioxide manu-acture as a bye-product recovery. No foreign collabora-ion nor any import for its commercial grades, is to be llowed. Excepting monoethanolanine, all the raw aterials required for the production including coke, oal and potassium bicarbamate are available ndigenously.

Dissolved acetylene gas has an installed capacity of 13.10 million cubic metres. Its production was 6.2 million cubic metres in 1971. Here again no foreign collaboration will be allowed for further capacity expansion nor imports are permitted but proposals for fresh licensing schemes will be considered on merits. The major raw material, calcium carbide, is available indigenously.

Hydrogen is currently produced by five manufacturing units in India. Its installed capacity is about 1.44 million cubic metres while actual production is slightly over a million cubic metres in 1971. As in the case of other industrial gases mentioned above, India's industrial licensing policy allows for further capacity expansion. Its imports are banned.

Nitrous oxide gas is currently manufactured by a single unit, M/s. Indian Oxyen Limited, Calcutta. Its installed capacity is 300 million litres per annum and its production was 240 million litres in 1971. This industry also offers scope for industrial capacity expansion but the import of the material is banned under the present import licensing policy. Ammonium nitrate which is the major raw material, is available indigenously.

As shortage of oxygen gas is felt due to continuous development of indigenous fabrication industries, nearly 100 letters of intent have been issued recently for capacity expansion. The present installed capacity is 74.25 million metres but the total capacity likely to materialise by 1973-74 has been estimated at 90 million cubic metres. In 1971, actual production was 54.14 million cubic metres. Commercial grades of oxygen gas are not allowed for import and no raw material other than 'air' is required for its manufacture. Currently, there are 28 private manufacturers engaged in its manufacture. Plants for the manufacture of oxygen are also available indigenously from M/s. Bharat Heavy Plates and Vessels, Visakhapatnam and M/s. Industrial Gases, Calcutta.

Liquid chlorine, a bye–product in the manufacture of alkalies, has an installed capacity of 267,660 tonnes. The estimated demand for this product is expected to reach 200,000 tonnes by 1973-74. Actual production in 1972 was 147,470 tonnes. While no imports are allowed, the product has a potential export market and nearly worth Rs. 1 million was supplied abroad in 1971-72.

About 98 per cent of the raw materials required for its manufacture are available indigenously and only mercury is having to be imported. The design and fabrication facilities of chlorine blowers, compressors, valves, storage tank, tin containers and cylinders are proposed to be developed within the country in the near future.

INDIAN FOOTWEAR INDUSTRY

Listed in the priority sector of Indian industries, the footwear industry is gradually emerging as one of the important foreign exchange earners. The total production of leather footwear is estimated to be around 170 million pairs per annum. The bulk of the production is in the private sector, undertaken by mainly small scale and cottage units.

In the organised sector, eight major units, seven in the private sector and one in the public sector have a total licensed capacity of the order of 13.30 million pairs while the installed capacity is placed at 23.30 million pairs. The additional capacity in the line, recently approved, is of the order of 3.02 million pairs. Thus, the total capacity (in the organised scetor) likely to be materialised by the end of 1973-74 is estimated at 26.33 million pairs. The organised sector's production has been ranging between 14 to 18 million pairs per annum. It was of the order of 14 million pairs in 1972.

The industrial policy of the Government of India indicates that the footwear industry is mainly reserved for units in the small scale sector, except in the cases of expansion and export oriented new units. No foreign collaboration is needed for the growth of the sector. However, it may be considered in respect of export production units on merits.

All the raw materials required by the industry are available indigenously. This includes leather, grindery and thread. Some items on a meagre scale such as special cement, lastings and wires are required to be imported.

India's export earnings of leather footwear are growing from year to year—Rs. 71 million in 1968-69, and Rs. 87.45 million in 1971-72. An export target of Rs. 200 million has been set for 1973-74. With a vi to achieve this object, mechanised modern large sc units, capable of manufacturing high quality footwe as per the requirements of buyers abroad are bei encouraged.

TWELVE DIGIT CALCULATOR DEVELOPED

Among the varieties of calculators developed i India, one of the latest entries is 'Deltronix 2 manufactured by M/s. Devidayal Electronics and W Limited, Bangalore. Developed indigenously to wor standards, this desk calculator has been designed accomplish intricate calculations with simple key-boa operation.

The twelve-digit calculator has a memory regist and three working registers in addition to the twel digits. It has a decimal point system and posse calculator capabilities including chain multiplicati chain division, square and base exponent powe calculations, automatic decimal placement, roun off the last decimal place and leading zero supressio Its power requirement is 5 watts at 220 VAC a operating temperature ranges between 0°-C to 60°C Hardly weighing 1.5 kg. with a printer, its dimen are 320 mm x 210 mm x 95 mm and takes paper r of 57 mm width x 90 mm diameter.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

SUBSTITUTE FOR BOSTIK SEALANTS

Bostik compounds have excellent adhesion metals and are used specially for sealing pre cabins and integral tanks of aircrafts. These pounds are mostly consumed by defence organi

With a view to making the country indepen the import of this strategic material, ere undertaken at National Chemical Laboratory NCL), Poona, and a process for the manufacture of iese sealants has been successfully developed.

The process developed by NCL consists of the reparation of RPFN resins. Meanwhile, rubber is illed with other ingredients and then dissolved in olvent along RPFN resins. About 70 kg. per batch of ie finished product has been tested by M/s. Hindustan eronautics Limited (HAL) and it has withstood the pecified functional tests.

The major raw materials required for the manuacture of this product are phenol, formalin, resorchinol, xalic acid, nitrile rubber, rubber chemicals and olvents. Except nitrile rubber, all others are indienously available. Even this would be shortly vailable in the country when the firm which has been censed the process developed by NCL goes into roduction. All glass, stainless steel or glass lined quipment required can be got fabricated from local anufacturers. For economic reasons, a plant with capacity to produce 15,000 kg. per annum has been ssumed as a viable unit.

M/s. Hindustan Aeronautics Ltd. are reported o be using about 1400 kg. of this material every ear. The country's demand is likely to grow in uture. It is estimated that the present total defence equirement may be about 2250 kg. per annum.

NEW PROCESS FOR STEEL PRODUCTION

The National Metallurgical Laboratory (NML), Jamshedpur has developed a process of steel making by using basic-lined side-blown converter. Such a process can be used successfully for refining medium phosphorus and medium silicon basic iron employing air for the refining action. The developed process does not need costly oxygen gas, electric power or any fuels which are vital essentials for many other steel making processes. Unlike the acid and basic Besseme Processes, the developed process is not strictly restricted to the chemical composition of the basic iron. The process is suitable for production of low and medium carbon steels, at a very cheap cost, which are required for re-rolling industries of merchant mills. The molten steel can be used for making steel castings.

The "Know-how" developed by NML involves a process of steel making in basic-lined side-blown converter. The molten pig iron is charged in a tilting type basic-lined converter with an arrangement for blowing air from the side of the vessel. The vessel can be tilted during the process of conversion of molten iron to steel to control the chemical reactions. The requisite amount of flux is added to obtain the desired basicity degree of the slag. As the air does not bubble through the bath, the nitrogen pick up is low. The air blowing is continued till the carbon flame disappears with requisite addition of burnt lime and other ferroalloys. The blown metal transferred to a ladle, deoxidised and after the additions to control the composition, it is steamed in an ingot form for re-rolling purposes.

Extensive investigations have been performed in a 500 kg. per charge capacity basic-lined side-blow converter at National Metallurgical Laboratory (NML) to develop and perfect the processing technique. It has proved that the basic-lined side blown converter technique for steel making, can produce acceptable grades of steel from basic Indian pig iron containing medium phosphorus. It is observed from blown metal analysis C 0.04 per cent, Si 0.08 per cent, P 0.012 per cent, N2 0.003 per cent, that it is possible to oxidize impurities to a low level and produce suitable quality steel.

The main items of raw materials required for the process are pig iron (basic), coke, limestone, burnt lime and deoxidisers like Fe-Mn, Fe-Si and Al shots.

The basic equipment required are melting furnace (cupola) for melting basic pig iron (2-3 Nos), mixer, basic-lined side-blown converter equipped with air blower, ladles and ingot moulds and electric overhead travelling cranes. One converter of 2 tonnes/charge capacity with another as standby will produce 40 tonnes of molten steel daily and about 12,000 tonnes yearly.

ON INDIA'S STEEL INDUSTRY

Production of steel ingots in India totalled 6.13 million tonnes in 1972-73. It was only 4.18 million tonnes in 1961-62. The output of saleable pig iron is estimated at 1.37 million tonnes for 1972-73 while it was 1.16 million tonnes in 1963-64. Production of tool, alloy and special steels was of the order of 430,360 tonnes in 1972-73. Finished steel production in 1971-72 was 4.96 million tonnes. Categorywise, finished steel production in 1971-72 was: light, medium and heavy structurals 705,000 tonnes; heavy and light rails 375,000 tonnes; black sheets (hot rolled and cold rolled) 315,000 tonnes; steel bars 1154,000 tonnes; steel rods 563,000 tonnes; steel wires (black galvanised and others) 225,000 tonnes; hoops and strips 210,000 tonnes and tin plates 115,000 tonnes.

Notwithstanding the progress in steel production over the years, the per capita consumption of steel in India still remains at around 10 kg. as compared to the World's consumption at 150 kg. per head per annum. Considering this position, serious attempts have been made to increase its steel manufacturing capacity to meet the future needs. In view of the long gestation period required for setting up steel plants and to provide for its main inputs such as coal and iron ore, it has been felt essential that the capacity that should become available by 1985 should be planned even now. Accordingly, it has been decided to expand the existing plants and plan for new plants. Of the public sector project the production capacity of Bhilai steel plant is proposed to be raised from 2.5 million tonnes to 4 million ingot tonnes and later on to 7 million ingot tonnes per year. The posssibilities of further expansion of the two other existing public sector projects at Durgapur and Rourkela are also being explored. The fourth public sector plant at Bokaro is to be expanded from the first stage of 1.7 million ingot tonnes to 4 million tonnes and thereafter to 5.5 million tonnes. Apart from the public sector steel plants, possibilities of expansion by the Indian Iron and Steel Company (IISCO) to about 2.5 million tonnes and Tata Iron and Steel Company (TISCO) to about 4.5 million tonnes are also being examined.

In addition to the expansion envisaged in repect of existing steel plants, a chain of new steel plants is proposed to be set up. The new plants at Visakhapatnam (Andhra Pradesh) and Vijayanagar (Mysore) are each being designed for a capacity of around 2.7 million tonnes of mild steel. Special steel plants at Salem with a capacity of 195,000 tonnes is under execution. All these plans for expansion of existing plants and setting up of new plants are expected to yield a production rate of about 16 million tonnes by 1980.

As the setting up of a steel plant requires a large measure of planning for the manufacture of mechanical and electrical equipment, design knowhow for equipment of fabrication and consultancy and engineering services, the existing public sector agencies for the manufacture of heavy mechanical and electrical equipment as well as bulk handling and conveyor equipment are being strengthened. Particularly, the Heavy Engineering Corporation at Ranchi, Heavy Electrical units at Hardwar, Bhopal and Hyderabad and Mining and Allied Machinery Corporation at Durgapur are receiving close attention. Capacity for the Supply of complete instrumentation has been created at M/s. Instrumentation Limited, Kota. The Hindustan Steel Works Construction Limited is being developed as a key construction organisation for building new steel plants. Over the last few years the Indian economy has placed emphasis on the development of equipment manufacturing capacity and technical skills. The results of these efforts are to be reflected in the new steel plants which will have sizeable indigenous content both in terms of technical know-how and equipment.

As regards alloy steel, production was limited in India a few years back to simpler grades of low value items. With the setting up of Alloy Steel Plant at Durgapur to produce 60,000 tonnes of finished alloy steels, conversion of M/s. Mysore Iron and Steel Limited into an alloy steel plant with a production capacity of 77,000 tonnes and with the setting up of a unit in the private sector, M/s. Mahindra Ugine Limited, with a production capacity of 24,000 tonnes, the indigenous alloy steel production capacity was augmented substantially. In the year 1968 69 the production of alloy steel was only 200,000 tonnes which increased to 350,000 tonnes in 1971-72. This includes silico manganese spring steel, chrome-vanadium, spring steel carbon and alloy constructional steel, high speed steel, high carbon of alloy tool and die steel, die blocks, stainless and heat resisting steel, free cutting steel and electrical steel sheets. There are further plans to develop alloy steel production.

Connected with the production of alloy, special plain carbon steels, the question of scrap utilisation lso receiving attention. To meet the indigenous nand for ferrous scrap that constitutes the principal lstock for the electric furnace units in India, the ort policy for scrap has been made restrictive. os for collection of scrap and supplementing it with tial use of pig iron are also on hand.

M/s. Hindustan Steel Limited organises the ting public sector steel projects. An all round rovement in the production of all the units of this pany was witnessed in 1972-73. The aggregate duction from the three integrated steel plants under L exceeded the preceding year's production. It 4008,000 tonnes in 1972-73 as compared to 5,000 tonnes in 1971-72 for ingot steel and 2986,000 nes against 2598,000 tonnes for saleable steel in the pective years. This is the highest annual aggregate duction from these plants so far. Unitwise, the ingot l production in 1972-73 and 1971-72 respectively was 8,000 tonnes and 1953,000 tonnes for Bhilai steel nt; 723,000 tonnes and 700,000 tonnes for Durgapur l plant and 1173,000 tonnes and 823,000 tonnes for rkela Steel Plant. Saleable steel production was 4,000 tonnes in 1972-73 and 1568,000 tonnes in the ceding year for Bhilai; 477,000 tonnes and 432,000 nes for Durgapur and 761,000 tonnes and 593,000 Rourkela. The production from the alloy steel nt at Durgapur which has also been under the nagement of HSL stood at 61,000 tonnes for ingot l and 56,000 tonnes for seleable steel in 1972-73 ch was an improvement over the preceding year. e Fertilizer plant at Rourkela again under the nagement of HSL produced 196,000 tonnes of cium ammonium nitrate in 1972-73.

The HSL succeeded in exporting its production to tune of Rs. 169 million in 1972-73, as against 219 million in 1971-72. Categorywise, pig iron ; exported to the level of 388,800 tonnes (Rs. 127.4 lion, structurals 36,900 tonnes (Rs. 34.5 million), s 4400 tonnes (Rs. 3.2 million) and galvanised sheets 0 tonnes (Rs. 3.6 million) in 1972-73. HSL cessed in diversifying its markets for pig iron by ging orders in new markets such as U.S S.R. and an during the year.

The Government of India have recently set up the el Authority of India Limited (SAIL) to organise efficient development of the steel industry and associated input industries such as iron ore, coking coal and manganese ore and to ensure optimum utilisation of resources placed before the steel projects.

The Mysore Iron and Steel Limited, Bhadravati, a joint undertaking of the Government of Mysore and the Government of India produced during 1971-72 44060 tonnes of saleable mild steel, 51280 tonnes of special steels and 20520 tonnes of ferro silicon besides cement and castings. For the first time in India, this plant produced ferro silicon by using Mill Scale in place of turnings and borings, a technique entirely developed by the plant's engineers. It has also started production of tool steel, which was of the order of 7400 tonnes in 1972-73.

The Indian Iron and Steel Company (IISCO) whose management was taken over by the Government of India in July 1972, produced 431,175 tonnes of ingots and 351,025 tonnes of saleable steel during 1972-73. In 1973-74, the production is expected to be of the order of 650,000 tonnes of steel ingot equivalent to saleable steel production of 511,000 tonnes. The company's installed capacity is 1 million tonnes of steel ingots, corresponding to 0.8 million tonnes of saleable steel. The various items manufactured by IISCO include billets, bars, rods, rails, sheets and structurals.

Bokaro, the fourth integrated Steel Plant in public sector is the biggest single undertaking in India both in terms of magnitude and capacity. Out of the total provision of Rs. 10350 million for steel development in the Fourth Five Year Plan ending 1973-74, investment in the Bokaro plant accounts for Rs. 6830 million. By 1973, the total investment in the project exceeded the plan provision to the level of Rs. 7930 million. The work on the plant commenced in 1967. The erection of different units of stage I has been completed and the commissioning of the units is round the corner. To meet the increased steel demand it has been decided to accelerate the expansion of Bokaro to 4 million tonnes in a manner that a capacity of 2.5 million tonnes would be installed by 1973-74. The plant has been designed utilising the latest technical innovations so that material usage, labour and energy consumption will be kept to the minimum. Bokaro is being built with a very high percentage of indigenous equipment, structures and refractory materials. While Rourkela, Bhilai and Durgapur were virtually turnkey projects

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where the bulk of equipment and other materials were imported, the emphasis in the case of Bokaro has been on maximum indigenisation. Besides participation of Indian organisations in the design and engineering of the project, about 90 per cent of building structures, 100 per cent of technological structures, 65 per cent of mechnical equipment, 48 per cent of electrical equipment, 80 per cent of intruments and 60 per cent of refractories are being obtained indigenously for the first stage of the plant. The greater part of this sophisticated equipment and materials is being made in India for the first time. The process of indigenisation is expected to be carried forward further in the second stage of the plant in which the design and engineering work has been wholly entrusted to Indian agencies. The entire structurals steel work required for this expansion will be done in the country. Nearly 85 per cent of the equipment and practically the entire requirement of refractories will also be met from indigenous sources.

On the export front, the steel industry contributed Rs. 408 million during 1971-72. Categorywise, exports of pig iron earned Rs. 97.4 million; steel bars and rods Rs. 108 million; rails and railway track construction material Rs. 88 million; steel tubes and pipes Rs. 108 million; steel wire and wire ropes Rs. 2 million and iron and steel castings and forgings Rs. 3 million. In the first three quarters of 1972-73 (April-December 1972), the export value of iron and steel manufactures stood at Rs. 298 million. ☐

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NDIA SUPPLIES CONSULTANCY SERVICES ABROAD

An Indian firm has been approached to undertake a study on the economies of scale of steel plant sizes varying from 25,000 tons to 300,000 tons a year in Latin American Locations by the U. N. Economic Commission for Latin America. The firm's advice was sought by Mauritius on modernisation and expansion of rolling mill facilities and improvement of operations. An intra-regional ferro-alloy feasibility study for Cambodia, Laos, Thailand and Republic of Vietnam was also undertaken by the firm. It was requested to supply engineering services for a new rolling mill in Thailand as also for improving the existing operations of M/s. Thai-India Steel Company Limited, Bangkok. An engineering report on expansion of steel making/continuous casting facilities was prepared by the firm for the Ceylon Steel Corporation, Sri Lanka. M/s. Metallurski Institute Zenia, Yugoslavia, assigned to the firm a technical and economic feasibility study on better utilisation of a steel melt shop at the Zenica Steel Works. Feasibility reports were undertaken by the Indian firm in respect of an alloy steel plant and ferro-alloy plants in Iran. The Government of Syrian Arab Republic approached the Indian company for the preparation of a feasibility report on Syria's first integrated steel plant. Technical consultancy has been supplied by the firm to Arab Republic of Egypt for the revamping of a convertors shop at the Helwan Iron and Steel plant. The same Indian firm also prepared a feasibility report for the Government of Libyan Arab Republic on an iron and steel complex in that country. All these assignments and many more were successfully undertaken by M/s. M. N. Dastur & Company Private Limited, P-17, Mission Row Extension, Calcutta-13.

The above firm is one of the largest consulting engineering firms of its kind in India. Established in 1955, it has pioneered engineering consultancy in the country and became the first Indian retainer consultants to the Government of India. It has no financial ties with any equipment suppliers or contractors in India or abroad and this independent status provides objectivity to give impartial technical advice to its clientele. Since inception, the firm has been actively involved in the development of steel industry in India. In the international field, it has been intimately associated with steel planning in a number of developing countries.

In collaboration with its overseas subsidiaries, M/s. Dastur Engineering International GmbH, Dusseldorf, the Calcutta firm has either completed or is currently carrying out several steel assignments abroad in countries like Iran, Arab Republic of Egypt, Libya, Syria, Sri Lanka, Thailand, Mekong basin countries, Yugoslavia and Cyprus.

Originally having specialised in the metullurgical field, the above consultancy firm now provides services in diverse fields such as iron and steel, ferro-alloys, alloy and special steels, mining and mineral processing, refractories, chemicals, light and heavy engineering plants, power generation, nuclear fuels, and industrial structures. The company and its West German subsidiary have handled so far over 200 assignments including ore mining, beneficiation and pelletisation, pig iron plants, integrated steel plants, alloy and special steel plants, mini-steel plants, ferro alloys, foundries and metal working plants, non-ferrous metals, minerals and refractory plants, chemicals and fertilisers for a total value of U.S. $ 7200 million.

The firm provides a comprehensive range of services, starting from preliminary planning, feasibility studies and raw material investigations to design and engineering, construction, supervision and commissioning of the plants. To achieve optimum plant design and to ensure reduction in construction period, the company employs modern techniques such as network-analysis and computer applications.

Within India, the above consultancy organisation received quite a few assignments. They include the alloy steel plant at Durgapur, Bokaro Steel Project, Mukund Iron and Steel Works, Bombay, Salem Steel Plant; Visakhapatnam Steel Project, Steel Complex Limited, Feroke near Calicut (Kerala); Ferro-chrome plant; for Ferro-Alloys Corporation Limited; Ferro-silicon plant for Indian Metals and Ferro-alloys Limited, Uranium Milling Plant, Jadugoda; Nuclear Fuels Complex, Hyderabad; Graphite electrodes plant Durgapur; Gelatine Plant, Ootacamund; Electrolytic Manganese Dioxide Plant, Bombay and a number of mini-steel plants and rolling mills.

While such is the profile of M/s. Dastur and Company, there are a number of other consultancy service units in India that offer a wide range of technical services in many fields of importance to any developing economy like India. The types of services which these Indian consultants are equipped to undertake inclu market surveys, feasibility studies and preparatio project reports; techno-economic surveys, plann and preparation of detailed designs and specifica for plant and equipment; assessment of bids a recommendations of equipment selection, proj engineering and fabrication; supervision of construct and commissioning; management consultancy an evaluation of projects and methods.

In India's public sector, M/s. National Industri Development Corporation Ltd. (NIDC), Chanak

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navan, NDMC Complex, Vinay Marg, New Delhi–21, fers a wide spectrum of industrial and management nsultancy services as well as economic development rvices, from evaluation of regional development dustry oriented programmes to feasibility reports, etailed and engineering project management, all the ay up to commissioning and start up of plants. Apart om a large number of projects serviced in India, this orporation has undertaken project engineering and rnkey consultancy services for industrial projects in untries like Iran, Libya, Nepal, Sri Lanka, Kenya and outh Yemen on behalf of the United Nations dustrial Development Organisation (UNIDO) as well foreign governments.

The Projects and Equipment Corporation of India imited (PEC), Chandralok, 36 Janpath, New Delhi-1, equipped to undertake turnkey contracts involving anning design and engineering, supply, erection and ommissioning of railway and industrial projects in arious engineering fields. The PEC undertakes jobs ich as railway line construction, signalling systems, ailway workshops. general industrial engineering, rtilizers and chemical plants, ferrous and non-ferrous etallurgical plants, processing plants such as sugar lants, tea plants, pulp and paper plants, cement plants nd crushing and grinding mills, drugs and pharma-euticals; civil engineering and structurals; petroleum efinery; power generation, distribution and transmission nd water resources, irrigation and flood control.

Set up to function as a Consortium of leading overnment enterprises as members for the purpose of xecuting complete plants on a turnkey basis, M/s. ngineering Projects (India) Limited (EPIL), Himalaya Iouse, Kasturba Gandhi Road, New Delhi-1, aims at ooling their resources of industrial organisations in the ublic sector and coordinating their activities where a omplete project is to be undertaken.

The Engineering India Limited (EIL), 4, Parlia-nent Street, New Delhi-1 can provide a complete range f consultancy services from the preparation of easibility reports to construction, supervision and ommissioning. Besides providing services to big pro-ects in India, it has also been trying to enter interna-ional markets and has done some work already on the hiraz Refinery in Iran. It has also tendered for setting p refineries in Burma, Yemen, Jordan, and Kenya.

EXPORT EFFORT OF OKHLA INDUSTRIAL ESTATE

India's small scale industrial sector substantially contributes to the growth and diversification of the country's export trade. The success story of Okhla Industrial Estate, New Delhi is typical in this context. The export earning of the small scale units in the Industrial Estate totalled Rs. 10 million in 1971-72. This is to be viewed against the fact that the value of exports was hardly Rs. 0.3 million in 1965-66 which rose to Rs. 1.2 million in 1967-68 and Rs. 1.7 million in 1968-69. Only five of the units in the Estate were engaged in export activity in 1965-66 while 32 of the 163 units are active today.

Inaugurated in 1958, the Industrial Estate has grown from strength to strength over the years. Its annual production was hardly Rs. 2.5 million then. Today, the output value is in the neighbourhood of Rs. 90 million. The employment position has risen from about 500 workers to 5000. The units in the Estate are producing diverse modern sophisticated items as well as heavy machinery and other engineering goods. The items of export include power presses, guillotine shearing machines, lathes, steel pipes and pipe fittings, electric motors, electrical wires and cables, electronic components, amplifiers, microphones, safety razor blades, auto parts, fountain pens, handicrafts and sports goods.

Quality control is an essential aspect of the manufacturing activity in the Industrial Estate. The Small Scale Industries Service Institute (New Delhi) along with its net-works of workshops and laboratories provides assistance in quality control for the products produced in the Estate. The Service Institute assists the small units in making available technical know-how for proper tooling, dies, jigs, fixtures, designs and prototypes. The units in the Estate manufacturing electrical items have continuous access to the testing facilities at the Electrical Laboratory of the Service Institute. Common facilities like electroplating and heat treatment are also provided by the Institute. Training in various technical trades and aspects of management is also provided to the units by the Institute and this indeed has a direct bearing on the quality of the products manufactured by the units of the Estate.

In the profile of products manufactured by the units in the Estate include industrial winding wires, special alloy casting machine tools, electronic components, communication apparatus like amplifiers, stereograms, microphones, loudspeakers and tape recorders; Electric wires and cables, building fittings, hardware, cycle and parts, fine chemicals, pharmaceuticals, optical lenses and lens grinding machinery, refrigeration and air-conditioning equipment, sports goods, readymade garments, railway carriage wagons and locomotive components, steel furniture, electrical household appliances, mathematical and other instruments, sugarcane crushers, hydraulic equipment, stainless steel hospital equipment, typewriters and parts, leather products chemical and medicinal processing equipment, agricultural implements, locks, harrow disc and sheer plough, special valve connectors, tin containers, plastic mould, non-ferrous metalware, musical instruments and plastic goods.

The Industrial Estate at Okhla is a reflection of the manufacturing capability of the small scale industrial units in India. The export performance of the units of the Estate is an example of the overall competence of the country's small industrial units on export front.

INDIAN CRANES TO SINGAPORE

The Public Utility Board (Electricity Department) of Singapore has selected a Bombay firm against a global tender for the supply of two heavy duty cranes of 125-tonne capacity. The order has been secured by the Indian firm against stiff competition from renowned world manufacturers of cranes including M/s. Demag of the Federal Republic of Germany and M/s. Munuck of Norway. The order valued at Rs. 3.03 million in foreign exchange is to be executed by February 1974.

M/s. Western Mechanical Industries Private Limited, Bhandup, Bombay which has secured the above order netted another important order in 1972 for the export of 20 tonne semi-goliath cranes to a firm in Singapore, a subsidiary of M/s. Bathelhem of U.S.A. That order was also secured by the Indian firm in the face of competition from M/s. Demag of West Germany and M/s. Mitsubishi of Japan.

The Bombay firm's export performance in cranes in the last 18 months exceeded Rs. 4.2 million. It expects to receive further export orders for spares. Uganda was another customer of the firm in crane purchases.

The Singapore Government which accepted the tender by the Indian party deputed two representatives of its Canadian Consultancy team to make an on-the-spot assessment whether the Indian party would prove worthy of selection.

The crane industry (other than mobile) in India has an installed capacity of nearly 35,000 tonnes per annum. While the fabrication of cranes in light and medium ranges has also been established, the production of heavy duty cranes including special cranes for steel mill duty, tower cranes and wharf cranes has also been taken up in recent years.

Apart from the above Bombay firm, there are 28 more crane manufacturers in India with a varying capacity for production.

India's total export trade in mechanical handling equipment was of the order of Rs. 4.2 million during 1971-72. Of this, the contribution of power cranes was in the neighbourhood of Rs. 1.6 million Singapore, Kenya, Burma were the principal importers of the cranes.

RAILWAY COACHES TO ZAMBIA

With the winning over of an export contract valued at Rs. 1.5 million for the supply of seven railway coaches to the Zambian Railways recently, India's export capability in the field has been proved again. This contract was bagged by M/s. Integral Coach Factory, Guindy, Madras against stiff competition from developed countries such as the U.K. and Japan.

This export performance of the Madras firm in the African continent is expected to make headway in the following years in that continent. So far, the firm's exports were limited to South East Asian markets. It has already supplied railway rolling stock to Burma, Taiwan and Thailand. The Zambian order consists of four inspection coaches and two caboose coaches to carry artisans and other work-force.

These coaches involve three different kinds of ricate designs and layouts, restricting the normal ace between bogies. The major portion of the raw aterial mix for these coaches emerges from indigenous urces. The only components to be imported are heel sets and roller bearings.

The Madras firm has to its credit the manufacture 46 types of coaches, catering to a variety of purposes. ll May, 1973 it turned out 9500 coaches. Of these 00 were fully furnished. During 1972-73, it manuctured 705 coaches against its annual capacity of 750 mbers.

At present, there are 11 wagon manufacturing units India having a total capacity of 27515 four wheeler agons per annum. The annual domestic demand is the order of 12000 numbers. From August 1972, e wagon exports have been canalised through the ojects and Equipment Corporation, which is a bsidiary of the State Trading Corporation of India.

India's wagon building industry has completed veral export orders so far. The supplies include 0 covered wagons and 113 coaches to Taiwan, 1000 agons to Hungary, 150 wagons to Ghana, 45 coaches Thailand, 120 bogie wagons to Sudan and 100 tank agons to East Africa. Besides, an export order ceived from Poland for 500 covered wagons has been rtly executed and the remaining supplies are to be fected shortly. The massive order received by the dustry from Yugoslavia for the supply of 1300 covered agons and 2300 open wagons is under execution. So r 50 wagon set sub-assemblies and one prototype sembled wagon have been shipped to that country. mong the orders on hand are 492 wagons for Iran, 45 agons each for Iraq and East Africa (cattle wagons), for Sudan and 40 timber wagons for Sri Lanka.

LECTRIC FANS AND XPORT TRADE

India's exports of electrical appliances and pparatus are in widespread demand abroad. In the ide range of items in the line that are supplied verseas, export of electric fans and parts are showing ptrend. These fetched foreign exchange at a value of s. 15.27 million in 1971-72 as against Rs. 14.15 million in 1970-71. Of the total exports in 1971-72, electric fans and parts brought in Rs. 14.60 million as compared to Rs. 13.90 million in 1970-71.

Iraq with an intake valued at Rs. 5.50 million was the leading buyer of electric fans in 1971-72. Kuwait, the second best market purchased worth Rs. 4.35 million, followed by Sudan at Rs. 1.85 million and Nigeria at Rs. 1.45 million. Iran, Saudi Arabia, Singapore, Muscat, Trucial Oman and Sri Lanka were prominent among other buyers. Electric fan parts were mainly absorbed by Australia and Sri Lanka during the year.

During the first three quarters of 1972-73 (April-December 1972), electric fans secured Rs. 13.75 million as against Rs. 11.40 million in the corresponding period of the preceding year. Iraq (Rs. 4.32 million) constituted the leading buyer followed by Kuwait (Rs. 2.36 million), Nigeria (Rs. 1.06 million) and Saudi Arabia (Rs. 0.77 million).

M/s. Matchwell Electricals (India) Limited, Off Nagar Road, Poona-14, exported 4860 fans during 1972 to a large number of markets abroad. The firm's range of manufactures includes mechanical and electrical appliances and apparatus. Presently, the firm is engaged in the manufacture of electric fans of all types and fractional horse power motors. Its installed capacity is placed at 108,000 fans per annum. The production of fans during the year under review was of the order of 134,000 numbers. The Poona firm's modernisation and expansion plans in the field of table fan production are under progress and those in respect of ceiling fans are almost complete.

In the organised sector, there were 17 units engaged in the production of electric fans in 1972. Their annual installed capacity was of the order of 2.75 million numbers and the actual production was 100 per cent of the installed capacity in that year.

The country's electrical appliances and apparatus manufacturing industry is making rapid strides in production and exports in recent years. As against Rs. 206.25 million in 1970-71, the exports of the industry improved to Rs. 229.15 million during 1971–72. During the first three quarters of 1972-73, the exports fetched Rs. 192.80 million as compared to Rs. 176.25 million in the corresponding period of the preceding year.

The export range of the industry covers a large number of items including dry and storage batteries, battery changers, electrical accessories, electrical applicances, electric circuit breakers, electric control gears and switchgears, electric alternators and generators, electric rectifiers, electric relays and parts, electric transformers and parts, torque convertors and invertors, electric transformers and parts, electric power machinery, electric furnaces and ovens, electric fans and parts, electric flourescent tubes and fittings, electric lamps and bulbs, electric measuring and controlling equipment, electric motors and starters, electric pump sets, radios and parts, train lighting and railway signalling equipment, wireless and other electric equipment and electric wires and cables.

REFRIGERATORS AND AIR CONDITIONERS TO WORLD MARKETS

India's air-conditioning and refrigeration equipment industry has come to contribute sizeably to the country's export trade. As compared to Rs. 6.13 million in 1970-71, the foreign exchange earning of the industry improved to Rs. 8.50 million in 1971-72. Even during the first three quarters of 1972-73 (April-December 72), the exports reached a level at Rs. 8.26 million which was nearly equivalent to the entire preceding year's value. In this period, refrigerators and parts constituted the major area of export expansion having brought in Rs. 3.52 million while air-conditioning and refrigeration plants earned Rs. 2.65 million, air-conditioners and parts Rs. 1.05 million and water coolers and parts nearly Rs. 1 million. Ice making machinery was also active in export trade.

Poland, Kuwait, Nigeria, Iran and Arab Republic of Egypt were the prominent purchasers of refrigerators and parts while Singapore, Arab Republic of Egypt, Sri Lanka, Malaysia, Dubai, Muscat and Hungary were the leading destinations for refrigeration and air-conditioning plants. Air-conditioners and parts were mainly sought by Dubai, Abu Dhabi, Nigeria and Poland while water coolers and parts were particularly absorbed by Kuwait and Dubai.

M/s. Voltas Limited, Volkart Building, 19, Gra Road, Ballard Estate, Bombay has exported air- ditioners, refrigerators and parts to the tune of Rs. million in 1971-72. The firm's export perform in the year was more by about 55 per cent than t of the preceding year, It was also able to introd diamond drill bits and window air-conditioners some of the East European countries for the first tim

The firm's range of products includes complete a conditioning and refrigeration plants and accesso room air conditioners, water coolers, refrigerato core drills and diamond drill bits for the min industry, electric overhead travelling cranes, fork trucks, electric motor starters and switch boards. T firm has active plans for further diversification its product range. It has recently secured a letter intent (preliminary sanction) to manufacture centrifu packaged chillers, transport refrigeration equipme and plate freezers.

Besides physical exports, the Bombay firm h developed know-how in specialised areas such as mari air-conditioning, Railway and bus air conditioning a refrigeration of vans. A record achievement of t firm is to provide air conditioning and refrigerati equipment for the country's recently built frigate, IN Nilgiri. It has received orders for air-conditioning tw more frigates. It has recently introduced new mode of room conditioners in the market.

INDIAN CIGARETTES TO USSR

India–manufactured cigarettes have come to enj wide popularity in overseas markets. From on Rs. 0.26 million in 1969-70, the cigarette exports r to Rs. 15.70 million in 1971-72 (1.18 million kg.). I the first three quarters of 1972-73 (April-Decemb 1972), the export value reached a level of Rs. 1 million (1.05 million kg.) even fetching more than t full preceding year's in the line.

During 1971-72, U.S.S.R., constituted the larg single buyer which imported the bulk at Rs. 1 million. Quantitywise, its intake was of the orde 1.14 million kg. Hungary, Saudi Arabia, Ma and Sri Lanka were among the other markets.

In the first nine months of 1972-73, U.S.S.R. gain topped the list of importers having absorbed orth over Rs. 16 million. In terms of quantity its urchases totalled over 1 million kg. Hungary was nother importer.

One of India's leading tobacco units, M/s. Vazir ultan Tobacco Company, Post Box 6, Azambad, Hyderabad (A. P.), recently secured an export contract om U.S.S.R. for the supply of 100 million cigarettes. he first consignment of the cigarettes under the brand ame 'Charminar' are under shipment from Bombay. he export variety of this brand is distinct in its quality nd packing. The installed capacity of the firm is of the rder of 14725 million cigarettes. Its production during he year ended September 1972 was 13649 million igarettes.

In the organised sector, there were 13 units enaged in the manufacture of cigarettes in 1972 and their nstalled capacity was of the order of 57,690 million ieces per year. The production was estimated at 1,000 million pieces during the year.

India's total exports of tobacco and tobacco manuactures were of the order of Rs. 450.80 million in 971-72 as against Rs. 325.60 million in 1970-71. During the first three quarters of 1972-73 (April-December 1972), the exports amounted to Rs. 527 million as compared to Rs. 369.90 million in the orresponding period of the preceding year.

In 1971-72, U.K., U.S.S.R., U.S.A., Japan, Yemen Arab Republic, Ireland, German Democratic Republic, Indonesia, Belgium, Somalia, Czechoslovakia, Switzerand, Saudi Arabia were the leading markets while during 1972-73, U.S.S.R., U.K., Japan, Bangladesh, Ireland, Somalia, Bulgaria and Nepal were the prominent destinations.

PERMANENT MAGNETS ON EXPORT STREAM

Among a wide range of electrical machinery and apparatus that are exported from India, electro-magnets are emerging as promising items. The export value of electro-magnets, chucks and clamps amounted to Rs. 0.55 million during 1971-72. During the first nine months of 1972-73 (April-December 1972), the value was of the order of Rs. 0.50 million. In 1971-72, U.K., Arab Republic of Egypt, Netherlands, Australia, U.S.A., Thailand, Sweden and Philippines constituted the major destinations while in the first three quarters of 1972-73 U.K., Arab Republic of Egypt, Netherlands and Sweden were the leading buyers.

Adding to the export endeavour of the sector engaged in the manufacture of magnets, M/s. Permanent Magnets Limited, Maharshi Dayanand Bhavan, Raopura, Baroda-5, exported magnets during 1972 to the tune of Rs. 470,000. Additionally, its exports of burners amounted to Rs. 343,000.

The Baroda firm is engaged in the manufacture of all kinds of permanent magnets and burners for stoves. It has entered into technical collaboration with a Swedish firm for the manufacture of burners and with an Italian firm for permanent magnets. The installed capacity of the firm is now raised to 400 tonnes of cast magnets per annum. Its production of magnets was of the order of 200 tonnes while that of burners was 291,000 numbers during the year under review.

EXPORT PERFORMANCE AND POTENTIAL

RECORD IN ENGINEERING PRODUCT EXPORTS

India's exports of engineering goods fetched Rs. 1502 million during 1972-73, registering an all time high record. In the preceding year, the exports totalled Rs. 1260 million. Thus, the exports during 1972-73 registered an increase of 19 per cent over that of the preceding year, according to the Engineering Export Promotion Council, Calcutta.

In the wide range of the items exported during the year, about 30 items earned foreign exchange over Rs. 10 million. Besides, out of 63 items that have fetched Rs. 1 million or more, nearly 25 per cent of these registered decline as compared to the last year.

During the year under review a significant change in the composition of exports of engineering goods was noticed. More and more of industrial plant and machinery for turn-key projects and equipment for power stations and transport were supplied abroad. The export target for 1972-73 had been set at Rs. 1650 million.

HANDLOOM GOODS EXPORT UP

Registering an increase of 18 per cent over the performance during 1971-72, Indian exports of handloom goods in 1972-73 witnessed clear uptrend. The export earning was Rs. 357 million in 1972-73 as compared to Rs. 300.75 million in 1971-72, according to the Handloom Export Promotion Council, Madras.

During 1972-73, the Cotton handloom sector constituted the major group of export expansion and netted Rs. 272.75 million as against Rs. 226.75 million in 1971-72. The silk fabrics sector, the next best group active in exports fetched nearly Rs. 83 million as compared to Rs. 71.50 million. In the Woollens sector, the export value was Rs. 1.10 million against Rs. 2.15 million.

In the cotton handloom group, fabrics of standard type was a significant line of export growth having secured Rs. 117.30 million as compared to Rs. 100 million. Real Madras handkerchiefs, shirtings and bleeding Madras were the specific categories which contributed to the export rise. Lungies and sarongs, sarees and dhoties were the items for which there was a reduced offtake. In the same group, cotton handloom readymade garments emerged as the second best area of sizeable export earning. It brought in Rs. 99.60 million as against Rs. 59.40 million. The Cotton handloom non-fabrics category earned Rs. 55.83 million as compared to Rs. 67.15 million.

Of the total export earning of silk fabrics, Mulberry silk fabrics as well as tasar silk fabrics fetched Rs. 68.20 million and Rs. 14.80 million as compared to Rs. 58.45 million and Rs. 13 million respectively during the years under review.

In the woollen handlooms group, woollen and worsted fabrics and woollen blankets are the main categories supplied abroad.

EXPORT POSITION OF HANDICRAFTS

The last decade has witnessed a fourfold growth in the export potential of Indian handicrafts. The export value was only Rs. 193.4 million in 1961-62 and it grew to Rs. 905.20 million in 1971-72.

Handicraft exports contributed 5.6 per cent of India's total exports trade during 1971-72 as compared to only 2.9 per cent during 1961-62. They have come to occupy a place of pride as one the foremost export items from India along with jute manufactures, tea, iron ore, leather goods, engineering goods and cotton textiles.

More than half of the total exports of handicrafts are from the sector of precious, semi-precious and synthetic stones.

Woollen carpets, rugs and druggets account for another 15 per cent. Woollen carpets from Kashmir and Mirzapur are renowned the world over. The art metalware contributed about 8 per cent and handprinted textiles nearly 5 per cent of the total handicraft exports in 1971-72. Among other important handicrafts exported are artistic woodware, imitation jewellery, zari, cotton carpets, embroidered goods and ivory products. Brassware of Moradabad and woodware of Saharanpur have become particularly popular in the world markets. The Indian handprinted silk scarves is largely sought after in Western countries.

About 45 per cent of India's total handicraft exports is the direction of Europe while another one-fifth goes to American countries. The Afro-Asian region absorbed the remaining 35 per cent in 1971-72.

Important countries where Indian handicrafts are supplied in large quantities are U.S.A., West Germany, Belgium, the U.K., Japan, Hong Kong and Netherlands.

The All India Handicrafts Board is a Central Government Organisation for undertaking the development and export promotion of handicrafts in India. Besides the Board, State Governments also undertake the development programmes. A commercial organisation, Handicraft and Handloom Export Corporation, has been set up to boost the handicraft exports from the country.

It is planned to double India's handicraft export earnings to the level of Rs. 2000 million during the next five years.

OUSEHOLD METALLIC UIPMENT AND EXPORT TRADE

India's export trade in household equipment of
e metals has brightened in recent years. In the
ge of exports are domestic stoves, cookers, utensils,
.N.S. ware, sanitary fixtures and indoor ornaments.
e foreign exchange earning of this equipment revealed
able increase in 1972-73. In the first three quarters
this year (April-December 1972), the export value
od at Rs. 37 million as against Rs. 23.7 million in
same period of 1971-72. The export earning even
ing the first three quarters of 1972-73 was more than
33 million during the entire year of 1971-72.

Pressure stoves which earned nearly Rs. 5 million
he first three-quarters of 1972-73 were purchased by
ya, Dubai, Philippines, Swaziland and U.S.A. In
range of domestic utensils exported, the prominent
cast iron pans, galvanised iron buckets, stainless
l utensils, Ghamellas, E.P.N.S. ware and utensils
de of copper, brass and aluminium. Stainless steel
nsils in the period under review earned foreign
hange worth Rs. 3 million from U.K., Malaysia,
mbia and Fiji Islands. Nigeria was the best market
ghamellas. Of the nearly Rs. 15 million worth of
ort market in E.P.N.S. ware during the period, the
iet Union absorbed worth about Rs. 6 million.
S.A. was another prominent purchaser at about Rs. 4
lion. U.K. and Poland were the other important
yers. Brass utensils are particularly popular in Saudi
abia which accounted for nearly Rs. 1 million out
the total earning of these utensils at Rs. 1.6 million
the period under review. Aluminium utensils
stitute another area of export growth. Their foreign
hange earning was of the order of Rs. 5 million.
st and West Asian markets are the major buyers.

In addition to the above household metallic equip-
nt, India also exports trophies, indoor ornaments
d picture frames of base metals.

Cutlery marks another line of export expansion.
is group has earned about Rs. 4.4 million in 1971-72
ile even during the first three quarters of 1972-73,
export value was more at Rs. 4.53 million. In this
up safety razor blades have earned about Rs. 1
llion, Sudan, Poland and Dubai being the principal
porters. Table-ware including spoons and forks
ured over Rs. 2.2 million in the first three quarters
1972-73 and the combined share of U.K. and U.S.A.
s nearly half of the total export value.

SPORTING GOODS SECURE MORE FOREIGN EXCHANGE

India's exports of perambulators, toys, games and sporting goods secured foreign exchange at a value of Rs. 21.20 million in the first three quarters of 1972-73, registering an impressive stride even over the exports during the entire preceding year at Rs. 19 million.

During 1972-73 (April–December 72), children's toys and indoor game materials earned Rs. 2.15 million. A wide variety of items was supplied abroad including plastic toys, rubber toys, wood toys, playing cards, complete dolls (excluding artware), metal toys, mechanical toys, toy parts and other indoor game materials. U.S.A, Yemen Arab Republic, Hong Kong, Nigeria, Sudan, Nepal and U.K. were the leading destinations.

Other sporting goods fetched Rs. 18.45 million. Among the different items that were active in exports during the period were football and rugby ball covers and bladders, football and cricket requisites, cricket bats and balls, badminton shuttle cocks, badminton rackets and frames; hockey balls, sticks and blades; tennis rackets and frames, polo balls and sticks including blade shafts; sports nets, badminton and tennis racket presses, fishing rods and poles and other fishing and hunting equipment. U.K., Federal Republic of Germany, U.S.A., Australia, Poland, Spain, France, Zambia, Thailand, Nigeria, and Canada were significant markets. Non-military arms is yet another line of export and U.K., U.S.A. Australia, Federal Republic of Germany and Czechoslovakia constituted the prominent buyers in the period.

INDUSTRIAL COLLABORATION WITH COLOMBIA

Pursuant to the visit of Indian Trade Mission to Colombia, the Indo-Colombian Authorities have agreed to study the possibility of mixed capital investments in a chain of new industries in Colombia. The specific fields of investment selected include bicycle factories, metal works, colouring plants, textile works and chemical plants.

The two-way trade between India and Colombia is currently on a limited scale. With the proposed joint enterprises, it is expected that both the countries will be able to expand their business on a sizeable scale.

India's exports to Colombia in 1971-72 were of the order of only Rs. 0.45 million as against Rs. 0.40 million in 1970-71, while her imports from that country totalled Rs. 0.80 million in 1971-72 as against Rs. 6.20 million in 1970-71. India's total export trade to the Latin American Region was of the order of Rs. 125.80 million and Rs. 83 million in 1971-72 and 1970-71. Her imports form Latin America amounted to Rs. 57.40 million and Rs. 142.65 million.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

CARBON BLACK AND CINEMA ARC CARBONS

With an installed capacity of about 41,000 tonnes distributed between two manufacturing units, M/s. Philips Carbon (Calcutta) and M/s. United Carbon (Bombay), the production of carbon black in India during 1972 was in the neighbourhood of 53,000 tonnes. Actually the licensed capacity for its production is about 54,000 tonnes and an additional capacity for nearly 30,000 tonnes has been approved. It is estimated that the product's indigenous demand will be about 55,000 tonnes by 1973-74 by which year the total capacity likely to materialise has been estimated at 54,000 tonnes.

Under the industrial licensing policy followed by the Government of India, the carbon black industry is open for further licensing and foreign collaboration proposals can be considered on merits. Included in the priority sector of development, the carbon black industry is cent per cent based on indigenous materials. Barring a few consumable items like refractory materials and filter bags, no raw material imports are necessary and the major input, petroleum feed stock, is available indigenously in sufficient quantities.

The carbon black industry in India has eve entered the export trade. Sri Lanka has been principal importer in the last few years. In the 1971-72, the export value of carbon black for rubbe and other industries totalled Rs. 2.50 million. T value of Sri Lanka's imports in the year were aro Rs. 1.09 million. Zambia, Kenya and Tanza Republic were the other importers.

The cinema arc carbons industry has an installe capacity of 9 million pairs per year. Actual produ tion in 1972 was of the order of 8.34 million pair The estimated demand by 1973-74 for the arc carbo within the country has been placed at 15.2 millio pairs and it is expected that the increased deman will be more than fully met in view of the fect tha a total capacity of 20 million pairs per year has bee approved and by 1973-74 an additional capacity of 1 million pairs is expected to be materialised. Foreig collaboration will not be allowed in proposals for furthe capacity expansion as the National Physical Laborator Delhi has successfully developed a process for its pro duction. Also the best part of raw material mix fo the arc carbon production is available indigenousl The import content constitutes only about 4 per cen of the total value. The important raw materia available indigenously are calcined petroleum coke pitch, rare earth salts and other chemicals.

The Cinema Arc Carbon industry has also entere the export trade. Sri Lanka is the major importer.

FACTS ON NEWSPRINT PRODUCTION

India's production of newsprint is about 40,0 tonnes per year. The National Newsprint Paper M Limited (Nepa Mills), Nepanagar, (Madhya Prades is India's first newsprint mill. The installed capa of this public sector mill has been recently raised f 30,000 to 75,000 tonnes per year. A second p machine at this mill was commissioned in 1969. O the full capacity of Nepa Mills is materialised 1975), about a third of India's newsprint requireme is hoped to be met. The domestic demand for print is estimated at over 200,000 tonne a year.

The number of newspapers published in India (in 0 languages) has risen from 3050 in 1956 to 12,218 in 971. The circulation of newspapers in this period ncreased from 29.3 million to 29.5 million numbers. urrent newspaper circulation in the country is of the rder of 1.3 copies per 100 inhabitants. The UNESCO as recommended a minimum standard of circulation of 0 copies for 100 inhabitants to bridge the communicaion gap in the developing countries. In other words, here is scope for the circulation to increase to about 8 opies more to reach the minimum prescribed by the UNESCO. It is against this background that the Government of India have formulated plans to improve he availability of newsprint within the country and cut own on the import bill which was nearly of the order f Rs. 180 million in 1970-71.

The Government of India set up in 1970 the Hindustan Paper Corporation to implement newsprint/ulp/paper project in the public sector. The Corporaon has an authorised capital of Rs. 300 million to xecute three major projects, namely, Nagaland Paper/ulp Project with a capacity of 30,000 tonnes a year, Kerala Newsprint Project with a capacity of 75,000 onnes a year and Assam Pulp/Paper Project with a apacity of 10,000 tonnes per year. In addition to the Corporation's efforts, a private party has also proposed o set up a newsprint project in Himachal Pradesh. Vith the coming up of this private mill, an additional apacity of 60,000 tonnes per year is expected to be reated. There is also a proposal to set up a newsprint actory in the private sector in Uttar Pradesh near Gola Gokkaram Nath with a capacity of 80,000 tonnes er year. With the fruition of these units both in ublic and private sectors, the industry will be in a osition to meet the growing domestic demand.

Currently, India imports newsprint mainly from Canada, the Scandinavian countries, U.S A. and U.S.S.R. In 1971-72, the import of newsprint was 80,000 tonnes.

Research Organisations in India are engaged in xploring means of maximising raw material availaility for the production of newsprint. While the Nepa Mills are manufacturing newsprint from 'wood salai' itherto not used elsewhere in the world, new processes or its manufacture are constantly explored. The Regional Research Laboratory, Jorhat (Assam), has eveloped a process for reclaiming pulp from newspaper waste. Some other research Laboratories in the country have also suggested the technical feasibility of using quick growing mesta as a substitute for the bamboo for the manufacture of newsprint. The use of mesta as a raw material for newsprint is expected to revolutionize the industry in India and bridge the gap between demand and supply without much difficulty. The advantages of mesta are that it ripens in four to five months and is suitable for tropical climate. Its water requirements are low.

Another important finding of domestic research on newsprint pertains to the fact that different species of eucalyptus can be grown to meet the needs of newsprint. Projects to grow eucalyptus have already been undertaken. The possibility of utilising sugarcane waste called bagasse, is also being examined. To exploit this process commercially, a sugar cooperative in Maharashtra has plans to transform bagasse into 45,000 tonnes of newsprint.

The appraisal of the newsprint development opportunities in India undertaken by the Food and Agriculture Organisation of the United Nations has forecast the possibility of India reaching the stage of self-sufficiency in newsprint by 1980, if the present plans and new schemes to create additional capacity are materialised. It is estimated by the FAO that total production of about 470,000 tonnes can be achieved by 1980.

INDIA - TODAY AND TOMORROW

Addressing the Empire Club and the Canadian Institute of International Affairs at Toronto (Canada) recently, the Prime Minister of India, Mrs. Indira Gandhi stated that India's State Policy has four major premises : democracy, socialism, secularism and a non-aligned independent foreign policy. She further stated that the justification of politics would be the elimination of poverty and disparity. "Development constitutes a special dimension of our democracy".

India has more people than the North and South American continent and Australia combined. Of its 21 states, 12 have more than 20 million people each and the largest has 90 million. In such a vast country, it would be obvious that development cannot be left to the mercy of market forces. "State intervention becomes necessary to ensure that the limited resources are directed into priority sectors of the economy".

In her defence on state intervention, the Prime Minister added "we have tried to bring basic industries, financial institutions and wholesale wheat trade under public control and to initiate measures for social investment". Economic development under state initiative has taken India decisively forward towards self-reliance in industry and technology. The state sector's present share of the national expenditure in India is still very much lower than in Canada or the United States. In metals, machine tools and power equipment as well as in railway rolling stock, shipbuilding, automobiles, aircraft, telecommunications, electronics and petroleum refining, the country's production and indigenous technological capability has increased. It is now able to design and build its own steel mills, fertilizer factories and atomic power stations.

As in other countries, the development of industry has enabled the modernisation of India's agriculture. Major and medium dams and canal systems have added 24 million acres to the irrigated area and there is wide spread adoption of modern methods of farming, resulting in a doubling of grain production. A bad drought has affected the economy in the current year along with other countries of Asia and a setback in agricultural output has been suffered. "But we have reached a stage which, given reasonably normal rainfall, reduces imports of grain to the minimum".

Referring to the Fifth Five-Year Plan, the Prime Minister stated that its main thrust would be to fill the gaps in self-reliance, promote the social well-being of the poorest sections and secure fuller utilisation of capacities already created. "Our Social programmes will give importance to the provision of house sites for the landless, inputs and credits for the small farmer in rain-poor areas, better housing in slums, more rural electrification, employment schemes for the educated unemployed and greater attention to family planning".

On the necessity to reduce concessional foreign exchange credits, the Prime Minister stated that in the last two decades, about a fifth of expenditure on development in India's economy has come from aid. But as economic base gains strength, the country's endeavour would be to earn external resources through trade rather than aid.

Mentioning that the Canadian trade volume has been small (the two-way trade being only $ 142 million of the two billion dollars of Canada's total trade with the rest of the world), the Prime Minister referred to the possibilities of identifying areas in which mutual trade and economic cooperation could be augmented. "In fact, one of the tasks before enlightened international leadership is to revise trade policies and practices and to reduce the handicaps suffered by developing countries. Any tendency to form rich men's clubs would lead to hardship and bitterness in the developing nations and harmful consequences for the future of the world". Each individual in an industrially advanced country uses as much as 20 persons in a developing country. "Can nations which took advantage of the earlier industrial revolution assume prospector's right to the world's air, water and other assets, debarring latecomers" ?

To the question "can India become a modern nation without sacrificing harmony and human values, without being caught up in the pursuit of possessions", India's Prime Minister answered "India can and will". India has given much to human civilisation. Even in the dark age of colonial subjection, India had men of radiance. A nation which comprises a seventh of mankind must have some contribution to make. It can do so when its billions are given the opportunity of developing their personalities. "The old insights, the conditioning of the last fifty years and the new vigour may yet combine to enable India to map out a distinctive path in human development".

HIGH GRAPES YIELD IN INDIA

The average yield of grapes in India is nearly 10 tonnes per hectare which is higher than that in California (U.S.A.) and far exceeds the yield in other important grape growing countries like Italy, France and Spain.

The area under grape cultivation has increased in the country from about 660 hectares to 9,000 hectares e two decades and a half. The State of Maharash- has the largest area under grape cultivation. yana is also one of the leading states.

Some quantities of fresh grapes and grape fruits exported from India. In 1971-72, Hong Kong, ., Nepal and France were among the leading orters. The total export value of fresh grapes in year was about Rs. 23,500. Grape fruits were supplied mainly to Dubai and Muscat.

India exports a variety of fresh fruits particularly goes, bananas, oranges, figs, sapota, pineapples, egranates, apricots and plums.

URIST ARRIVALS IN INDIA

India holds attraction for educationists, scientists students among tourists who visit the country. was the major finding of the Ministry of Tourism ch has analysed data concerning tourist arrivals in a. Educationists including students and scientists a class have exceeded all other groups during the three years.

Tourist traffic to India has been increasing at a of twelve per cent per year during the last three s. Targets have been set at 40 million tourist vals by 1973 and 80 million by 1978. In 1970, 2 million tourists visited India, showing an increase 14.8 per cent over the previous year. In 1971, the vals were higher at 31 million but the percentage ease dropped to 7.2. The traffic rose again to nearly million numbers in 1972. This gave an increase of ut 14 per cent.

More tourists came in winter than in summer. In 2, 55.5 per cent tourists visited the country in ter. For majority of tourists, the purpose of visit pleasure. The most popular mode of transport by air. Tourists in the 31-50 age group predomi- ed.

In 1972, over 70 per cent came from U.S.A. tish tourists were the next best, followed by those m Sri Lanka. Others in the top category were rists from the Federal Republic of Germany, stralia, Malaysia, Japan, Canada and Singapore.

Earnings from the tourist traffic in foreign exchange accounted for Rs. 38.30 million in 1970, Rs. 40.38 million in 1971 and Rs. 48.32 million in 1972. India earns a small fraction of the world tourist receipts. The Ministry of Tourism is trying to strengthen infrastructure including hotel accommodation for a sizeable increase in the tourist traffic.

The Ministry has for the Fourth Plan period planned to set up a chain of 17 youth hostels at Aurangabad, Amritsar, Bhopal, Dalhousie, Darjeeling, Gandhinagar (Gujarat), Hyderabad, Kamlapur (Mysore), Jaipur, Madras, Nainital, Panaji, Panchkula (Haryana), Pondicherry, Puri, Patni top (Jammu and Kashmir) and Trivandrum. Execution of most of these projects is already on.

In the Fifth Plan, it is proposed to put up 30 youth hostels at an estimated cost of Rs. 19.5 million.

EXPORT QUOTA FOR SEMI-PROCESSED HIDES AND SKINS

In pursuance of its policy to bring about a shift from the export trade of semi-processed hides and skins to those of finished leather and leather manufactures, the Government of India have recently announced a quota scheme for the export of semi-processed hides and skins. Already quantitative restrictions on the export of hides and skins have been placed effective from April 1973. These exports are to be progressively reduced every year and brought to a level of 25 per cent of 1971-72 figures of exports within a period of five years. Under the scheme now announced, all the exports made since April 1973 would be adjusted against quotas to be alloted to individual exporters. In case of any excess, it would be adjusted in the next year's quota of an exporter.

Under the scheme, a cut of 10 to 20 per cent would be imposed in respect of various types of hides and skins and on this basis on overall quota ceiling for the year 1973-74 would be fixed.

IMPORT OF NON-PERMISSIBLE ITEMS ALLOWED

India's import policy for the year 1973-74 has been liberalised. A recent announcement has allowed the import of non-permissible items by manufacturers/exporters. They can now be permitted to import non-permissible items to the extent of 5 per cent of the face value of their import replenishment licences against export performance. The value of a single item so allowed, however, should not exceed Rs. 10,000 and must be essential for the manufacture of the export product. The value limit could be raised to 10 per cen tof the value of the import replenishment licence in the case of those manufacturers/exporters who double their exports. As a measure of simplifying the procedure, it has been decided that it would not be necessary for a licence holder to obtain a recommendation of the sponsoring authority or an endorsement from the licensing authority on the licence.

The manufacturers/exporters can avail of the facility of importing non-permissible items provided the import replenishment licence is issued during April 73-March 74 under the import policy for registered exporters. The items so imported should be raw materials required for production of export product against which the import replenishment licence is issued. The item sought to be imported should not be a canalised one. Further, the imported raw materials and components should be used by the importer for his own factory in the production of the export production and no portion of it should be disposed of or used in any other manner. Also import of drugs, dyes and intermediates, plastic raw materials and chemicals would not be permitted.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

SUBSTITUTE FOR SLEEPING BAG MATERIAL

For sleeping bags at high altitudes, Eider Down is required which is an imported and expensive item. For some years, investigations have been undertaken to produce a substitute from indigenously available chicken feathers and a process has been developed by the Defence Research La (Materials), Kanpur.

The process involves cleaning the feathers trisodium phosphate followed by chemical treat By this process, curls and three dimensional effects produced which increase the filling power of feather. This process has been worked out on a tory pre-pilot plant scale. A plant capable of prod one kg. of treated chicken feathers has been set up technical evaluation and trial. Sleeping bags with treated chicken feathers have undergone trial.

Raw materials required for the process are rea available indigenously. The main items of machi required are stainless steel digester, strainers, centr rotary drier and fractionating column.

PNEUMATIC EQUIPMENT FOR QUALITY CONTROL

Equipment required for enforcing quality cont is currently being imported into India. It is o recently that efforts have been made for indigeni of some of the measuring instruments which could manufactured within the country with the availa material, know-how and machinery. Central Mecha cal Engineering Research Institute (CMERI), Dur pur, has developed pneumatic gauging instrum tion which is simple, accurate and has relatively cost of manufacture. Two systems of pneumatic gau are in existence. One is based on what is called Back pressure principle' and the other on 'the flow principle'. Each has its own merits and limitation the system based on the back pressure principle priority in the country. At present the demand is met entirely by imports but with the availability of indigenous device, the demand is expected to incre The main items of raw materials required are steel, gun metal, cast iron, glass tubes, spring G.I. steel, phosphor bronze, Beryllium copper, O- and other deals. All of these are available indige except Beryllium copper.

Pneumatic gauging equipment is an item does not warrant an exclusive commercial plant manufacture; an established gauge manufact concern can take it up as an item of diversificat

NDIA'S IMPORT BILL DECREASES

The first three quarters of 1972-73 (April-Decemer 1972) have witnessed a sizeable decrease in India's nport bill as compared to the corresponding period of e preceding year. The value of import trade has come own from Rs. 13,636 million to Rs. 12,390 million, decline of about Rs. 1350 million. The major products r which imports fell were cereal and cereal preparaons (mainly wheat), oil seeds, raw cotton and wool, egetable oils, fertilizers, paper and paper board, iron d steel, copper, agricultural machinery and appatus and transport equipment (particularly road motor hicles). The major countries from which imports to India have been reduced are the U.S.A., the U.K, land, Japan, Iran, Canada and Kenya. The principal crease was, however, in respect of U.S.A. from which arket India imported worth Rs. 1491 million in the st three quarters of 1972-73 as against Rs. 3198 illion in the same period of 1971-72—an almost 50 r cent reduction.

In the food and live animals group, wheat imports ere slashed down from Rs. 847 million to Rs. 34 illion in the comparable periods. The import of ce was reduced from Rs. 142 million to Rs. 103 illion. The total outgo of foreign exchange by way imports of cereal and cereal preparations was reducl from Rs. 1048 million to Rs. 217 million.

The import bill on fruits and vegetables increased, owever, from Rs. 279 million to Rs. 368 million. his was mainly due to the rise in the purchase of w cashew nuts from East African countries as well as y fruits particularly raisins from Afghanistan. Sugar nports were down from Rs. 14.5 million to Rs. 6.3 illion. The import trade in oil seeds, oil nuts and l kernels also recorded a fall from Rs. 84 million to s. 47 million.

Textile fibres and wastes were imported less at s. 948 million as against Rs. 1063 million. Raw otton import decreased from Rs. 870 million to s. 763 million and that of raw wool from Rs. 103 illion to Rs. 96 million.

The import of crude fertilizers and crude minerals as maintained around Rs. 260 million, although arginal reduction was noticed in the intake of sulphur d other crude minerals.

While the import of crude petroleum declined from Rs. 1102 million to Rs. 1064 million, petroleum products were bought more at Rs. 430 million against Rs. 328 million.

There was a substantial fall in respect of import trade in animal and vegetable oils and fats from Rs. 316 million to Rs. 152 million. Vegetable oil imports were reduced from Rs. 183 million to Rs. 103 million while the import of animal oils and fats reduced from about Rs. 130 million to Rs. 46 million.

The inflow of chemical elements and componds was marginally up at Rs. 592 million as against Rs. 574 million while the purchases of medicinal and pharmaceutical products were cut down from Rs. 214 million to Rs. 168 million. The import of paper and paper board fell from Rs. 235 million to Rs. 183 million. In the textile yarn and fabrics group, these was a sizeable reduction from Rs. 75 million to Rs. 47 million; import of textile yarn and thread fell from Rs. 46 million to Rs. 26 million. The purchases of pearls and precious stones rose, however, from Rs. 195 million to Rs. 300 million.

Iron and steel group also witnessed a decline from Rs. 1788 million to Rs. 1569 million. The decline was mainly in respect of iron and steel bars; rods, angles, and shapes; steel ingots and other primary forms, hoops and strips of iron or steel; iron and steel wires and wire ropes and universals and plates.

In the non-ferrous metals category whose imports also fell from Rs. 83 million to Rs. 77 million, copper was bought at Rs. 368 million as compared to Rs. 407 million and aluminium Rs. 23 million against Rs. 85 million. The import bill on account of nickel, lead, zinc and tin increased marginally.

The foreign exchange outgo on account of non-electrical machinery imports were more or less same at Rs. 2106 million. The import trade in power generating machinery, metal working machinery, textile and leather machinery rose marginally. Import of office machines, paper mill machinery, printing machinery, food processing machinery and building machinery was reduced substantially.

Purchases of electrical machinery and apparatus rose to the level of Rs. 850 million as against Rs. 727

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million. The major product groups that contributed to this increase were electrical power machinery and switchgear, equipment for distribution of electricity and telecommunication apparatus.

As for transport equipment, road motor vehicles were imported less at Rs. 205 million against Rs. 268 million, Railway vehicles at Rs. 135 million against Rs. 173 million and aircraft imports at Rs. 181 million against Rs. 197 million.

India imported more from the African continent in the first three quarters of 1971-72 at Rs. 1280 million as against Rs. 1186 million in the same period of the preceding year. Congo, Morocco, Sudan, Tanzania and Zambia were the principal markets from which the country imported more while from Kenya the imports were less by about 50 per cent and from Arab Republic of Egypt there was a marginal decline.

It was in the case of U.S.A., that the fall in the import bill was the steepest, at Rs. 1401 million against Rs. 3198 million. From Canada too, imports decreased to Rs. 496 million from Rs. 820 million. Import sfrom the Latin American markets were more or less the same at Rs. 45 million. Peru was the main market which accounted for the best part of imports from the region. This country supplied Rs. 30 million worth as against Rs. 15 million.

In the ECAFE region Japan supplied les
Rs. 1187 million as compared to Rs. 1238 mill
Imports declined in respect of Iran, Burma a
Singapore also. Supplies from Afghanistan, Austra
Koreas, Malaysia, Nepal, New Zealand and Thaila
were noticeably higher.

In the East European region, purchases fr
U.S.S.R., rose to Rs. 682 million as against Rs. (
milion. The imports were higher in respect
Czechoslovakia, Hungary, Rumania and Yugosla
while Bulgaria, German Democratic Republic a
Poland supplied less.

In West Europe, Indian imports from the E
countries were up at a value of Rs. 2219 million
compared to Rs. 1850 million. The Federal Repub
of Germany was the most important source and
supplied goods worth Rs. 1155 million as agai
Rs. 925 million. Excepting France, all other E
countries also supplied more to India in the peri
under review. Among the members of the EFT
countries, United Kingdom, the major traditional su
lier to India, exported to India worth Rs. 1600 milli
as against about Rs. 1650 million. Sweden, Switzerlan
Norway and Australia were the other European Fr
Trade Area (EFTA) markets from which Ind
bought more. ☐

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V.C POWER CABLES TO NITED ARAB EMIRATES

The Ministry of Water and Electricity, Abu Dhubi, ited Arab Emirates has recently placed an order 340 km PVC power cables worth Rs. 4.7 million M/s. Indian Cable Company Limited (INCAB), Hare Street, Calcutta. The order was secured against gh international competition and the delivery edule is to be completed within seven months.

Earlier, the firm has received another order for ilar cables from the same customer. Recently, they eived their first order ever for power cables from rdan and Mauritius.

Since the firm secured the first major export order m Kuwait in 1967, the total value of its exports upto March 1973 was over Rs. 60 million.

For the first time in India, the Calcutta firm has ently manufactured and supplied PVC insulated -bearing cables to M/s. Hindustan Copper Corporation, Khetri which had initially considered the import of this type of cables from France. These cables are to be installed in a vertical shaft, nearly 275 metres deep and are so designed that they might be kept freely suspended without any clamping device. Tests carried out in this connection proved that the cable could bear its entire load. The same customer was also supplied by M/s. INCAB, a 16 km double steel wire armoured PILC cable for power transmission and distribution.

Heat resisting PVC power cables are also being manufactured by the above firm since the last few years. These cables are already in use at the Bhabha and Rajasthan Atomic Power Projects and have brought in foreign exchange from Kuwait and Sudan. The range of these cables comprises from 1.5mm^2 to 1600mm^2 upto 1.1 KV grade.

The firm has recently received an order for 15 tonnes of continuously transposed conductors from M/s. Heavy Electricals (India) Ltd., Bhopal. This constituted the largest order received for the product since its manufacture started at the firm's Jamshedpur factory.

The INCAB Contract department has recently added another prestigious assignment from the U.P. State Electricity Board for the Ramganga Hydel Power Station. The job comprises supply and installation of power and multicore control cables. This power station complex would be one of the few of its kind using 11 KV PVC power cables in India. Earlier, the firm received another order for supply and erection of generator transformer connection with aluminium busbar for this power station.

INDIAN PRINTING PRESSES TO U.S.A.

India's exports of machines for special industries amounted to Rs. 17.35 million in 1971-72. Interestingly, the exports rose to this level from Rs. 7.25 million in 1968-69, Rs. 7.12 million in 1969-70 and Rs. 15.75 million in 1970-71.

During the first three quarters of 1972-73 (April-December 1972), the overseas supplies brought in foreign exchange at a value of Rs. 16.30 million, just equivalent to the entire preceding year's.

The export range includes paper and pulp mill machinery and machinery for manufacture of paper articles; printing, book binding machinery including printing presses; food processing machinery including rice mill machinery and parts; construction and mining machinery and mineral crushing, sorting and moulding machinery. Iraq, Arab Republic of Egypt, Uganda, Sudan, Zambia, U.S.S.R., U.K., Yugoslavia, Malaysia, Saudi Arabia, Singapore, Yemen Arab Republic, Kuwait, Hungary, Afghanistan, Muscat and Sri Lanka are the leading buyers.

Recently M/s. Chandler and Price India, Bombay one of the firms engaged in the manufacture of printing presses and parts finalised an agreement with a U.S. firm for the supply of 100 printing presses. The importing American firm M/s. Chandler and Price Company Inc. of Cleveland, Ohio, U.S.A. is buying these printing presses for the U.S. market. The shipment is expected to begin soon this year. The first batch of printing presses has already been approved by the importing firm.

In the organised sector, there were 7 units engage in the manufacture of printing machinery in 1972 wit an installed capacity worth over Rs. 9.6 million. Th production during the year is estimated at Rs. 4 million as against Rs. 3.75 million in 1971.

India manufactures a wide range of machinery catering to the requirements of a large number o sectors of economy including power generating industry agriculture industry, office-machine industry, meta working industry, textile and leather industry and machines for special industries. During 1971-72 India's exports of machinery (other than electric amounted to Rs. 241.60 million.

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ASIC INTERMEDIATES AND YES EXPORTS UP

M/s. Amar Dye Chemicals Limited, Sitaladevi emple Road, Mahim, Bombay-16, one of India's estuff units, has exported basic intermediates and es to a level of Rs. 8.40 million in 1972. Its exports se to this level from Rs. 5.55 million in 1971.

The firm is engaged in the manufacture of dyes of aphthol series, fast bases and stabilised azoic. Besides ese main items, its product range also includes sic and acid dyes, reactive dyes, pigment colours and tical whiteners. The firm's plant is situated at ahad, District Thana, near Bombay. Its annual ensed capacity is of the order of 2155 tonnes for termediates.

India's dyestuff industry earned foreign exchange the tune of Rs. 55 million in 1971-72. During the st three quarters of 1972-73 (April-December 1972), e exports were of the order of Rs. 74.85 million which tstripped the export earning of the entire previous ear.

Of the total exports in the first nine months of 72-73, synthetic organic dyestuffs, natural indigo nd colour lakes constituted the leading category having rought in Rs. 37.55 million as against only Rs. 15.35 illion during April-December 1971. Pigment, paints nd varnishes, the next best category, fetched Rs. 35.80 illion against Rs. 22.55 million, while dyeing and nning extracts earned Rs. 1.50 million as against s. 0.90 million.

The export range in the first category includes cid dyes, basic dyes, direct dyes and sulphur dyes, isperse dyes, lakes, solvent dyes, reactive dyes and zoic dyes, vat dyes and other organic synthetic yestuffs. Bulgaria, USSR, USA, Switzerland, U.K., rab Republic of Egypt, Netherlands, Hong Kong, apan, Federal Republic of Germany, Argentina, nd Iran were the leading buyers.

In the second category, prepared paints, varnishes, namels, lacquers and artist's colours, printing inks and olouring materials were mainly supplied to USSR, Abu Dhabi, Netherlands, Philippines, Iran, Singapore Arab Republic of Egypt, Iraq and Nepal.

Cutch extracts, food colours, Synthetic tanning materials, tanning extracts of vegetable origin, myrobalan fruit extract and wattle extract were mainly absorbed by Nepal, Singapore, U.K., Afghanistan and Sri Lanka.

India's dye-stuff industry has good potential in the export field. This is mainly because many advanced countries of the world are giving up manufacture of labour intensive products in recent years.

The total installed capacity of India's dye-stuff industry is over 18880 tonnes while the licensed capacity is of the order of 19260 tonnes. Recently, an additional capacity of 4970 tonnes has been approved. There are 21 units engaged in the manufacture of dyestuffs and their production in 1972 was of the order of 14500 tonnes as against 13400 tonnes in 1971.

SCOOTERS AND MOTOR CYCLES ON EXPORT STREAM

India's exports of road motor vehicles and parts totalled Rs. 120 million in 1971-72. During the first three quarters of 1972-73 (April-December 1972), the exports were of the order of Rs. 98 million.

The export range constitutes a wide variety and includes buses, lorries and trucks, passenger motor cars, special purpose lorries, road tractors and trailers, engine mounted chassis, chassis for tractors, chassis frames and bodies, motor vehicle initial equipment, motor vehicle replacement parts, tractor parts, motor cycles, scooters and their parts.

Arab Republic of Egypt, Yugoslavia, Sri Lanka, Sudan, Singapore, Nigeria, Nepal, Bahrein Islands, Iran, Iraq, Philippines, Saudi Arabia and the U.K. are important customers.

M/s. Enfield India Limited, Tiruvottiyur, Madras, export scooters and motor cycles, agro-industrial engines and spare parts. Their export was over Rs. 1.42 million in 1971-72. It was only Rs. 394,000 in the preceding year.

Among the firm's manufactures, motor cycles and agro-industrial engines are in good demand at home and abroad. The agro-industrial engines are being manufactured by the firm's plant at Thoraipakkam having an installed capacity of 40,000 engines per annum. The firm's production of engines was equivalent to 40,000 engines in 1971-72. It is planning to step up production at 50,000 numbers per annum. In the field of vehicle production, the firm's plant at Tiruvottiyur is currently turning out about 16,000 numbers every year equivalent to its installed capacity.

The firm's new plant at Anaikaraipatti with an annual capacity to produce 14,000 motor cycles is in progress. It is expected that the commercial production by the plant will commence in the middle of 1973-74. A number of small-scale ancillary units are also proposed to be set up adjacent to the motorcycle plant. It is estimated that by about 1976, the Anaikaraipatti plant would be able to step up its production to the level of its installed capacity.

In the organised sector of India, seven units with an installed capacity of 62,400 numbers were engaged in the manufacture of commercial vehicles in 1972. The production during the year was estimated at 37,470 numbers. In the field of car manufacture, the installed capacity of 47,400 numbers was spread over 3 units and their production was estimated at 40,040 numbers in 1972.

The total production during 1972 of other types of vehicles was : jeeps 2589 numbers; motorcycles 47557 numbers; scooters 64331 numbers; three wheelers 9790 numbers and mopeds and scooterettes 21607 numbers.

BISCUITS EARN MORE

India-manufactured biscuits are picking up steady demand in overseas markets. During 1971-72, these fetched foreign exchange at a value of Rs. 4.6 million. Quantumwise 1.20 million kilograms were supplied abroad.

During the first three quarters of 1972-73 (April-December 1972), the exports amounted to Rs. 3.2 million. In terms of quantity, 0.71 million kilograms were exported.

During 1971-72, Nepal constituted the biggest buyer which imported 0.86 million kilograms valued at Rs. 3.18 million, accounting for nearly 78 per cent of the total value. Bahrein Islands, Dubai, Muscat and Qatar were prominent among other destinations.

In the period under review of 1972-73, Nepal again topped the list of importing countries having bought 0.44 million kilograms worth Rs. 2.10 million. Dubai, Bahrein Islands, Hong Kong and Indonesia were the other importers.

M/s. Britania Biscuits, 15, Taratola Road, Calcutta stepped up the export of its food products including biscuits to a high level at Rs. 6.40 million in 1972-73 from Rs. 5.10 million in 1971-72.

The firm manufactures biscuits, bread and cakes in its four plants located at Bombay, Calcutta, Delhi and Madras. The firm has fabricated a bakery plant indigenously. The manufacture of biscuits is subject to strict quality control measures so as to ensure high quality supply to customers at home and abroad.

In tune with the Government of India's policy towards progressive diversification, the Calcutta firm has successfully introduced new products every year. In the recent years, it has introduced high protein foods, seafoods and cakes. The firm's Research and Development Division is consistently engaged in research work relating to quality enhancement and new product development. Its new project in the field of manufacture of frozen and canned seafoods and vegetables is predominantly export-oriented. Its first seafood processing unit is located at Thana, near Bombay and is expected to go on stream shortly. The firm is hopeful of earning a sizeable amount of foreign exchange through export of processed seafoods.

In the organised sector of the biscuit industry there are 31 units engaged in the manufacture of biscuits with an installed capacity of 94,200 tonnes (1972). The production of biscuits during the year was estimated at 68,700 tonnes as against 64,556 tonnes in 1971.

RON ORE ON EXPORT STREAM

India's exports of iron ore have been maintaining eady growth in recent years. In 1971-72, the exports ere of the order of Rs. 1047 million (20 million tonnes). uring the first three quarters of 1972-73 (April-ecember 1972), the exports brought in about Rs. 800 illion (15.25 million tonnes), registering a sizeable crease over the export value during the corresponding riod of the preceding year at Rs. 714 million. Iron e containing upto 10 per cent manganese content nstituted the largest single area of export growth uring the period under review of 1972-73. It secured s. 772 million. About 15 million tonnes were supplied uantitywise. Japan with an intake value of Rs. 644 illion, absorbing 12.85 million tonnes topped the list buyers. The next best importer was Rumania. It nported 0.85 million tonnes valued at Rs. 51.50 illion, followed by Czechoslovakia at Rs. 33 million .51 million tonnes), Poland at Rs. 18 million (0.26 illion tonnes), Yugoslavia at Rs. 8.15 million (0.12 illion tonnes) and Belgium at Rs. 5.52 million (0.15 illion tonnes). China Republic, Bulgaria and Iraq ere among other buyers.

Iron ore concentrates, the second important ategory fetched Rs. 26.76 million. Japan constituted e sole buyer which bought 0.30 million tonnes.

The export target of Minerals and Metals Trading orporation, New Delhi for the year 1973-74 has been aced at 13 million tonnes valued at Rs. 827.70 million. the preceding year, the target was 11.50 million nnes estimated at Rs. 716 million. Against this rget, MMTC's exports in that year totalled 10.6 illion tonnes valued at Rs. 691 million. Of this, the urchases of Japan alone were of the order of Rs. 506 illion and the rest was bought by the East European ountries.

Iron ore reserves in the country have been estima-ed at about 10,000 million tonnes. India ranks eventh among the iron ore producing countries. uring the last two decades, the production of iron e has registered considerable improvement—3 million nnes in 1950, 16.60 million tonnes in 1960 and 34 illion tonnes in 1971-72. On the export front too, on ore fetched more and more foreign exchange during is period. It is estimated that during 1972-73, the xports would touch 22 million tonnes.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT TRADE IN ENGINEERING GOODS

India's export trade in engineering goods provisionally estimated by the Engineering Export Promotion Council, Calcutta at Rs. 1502.40 million in 1972-73, has revealed a 19 per cent improvement over the level of the preceding year at Rs. 1260.40 million.

Several categories of engineering product export have revealed uptrend. Automobiles and auto parts, which is the prime foreign exchange earner among engineering items has earned Rs. 172 million in 1972-73 as against Rs. 151 million in the year that preceded. The export value of electrical wires and cables also increased to Rs. 126 million as compared to Rs. 112.5 million. Bicycles and parts constituted the next best item having secured Rs. 103 million as against Rs. 80.5 million. Overseas demand for M.S. pipes and tubes has also revealed improvement at Rs. 19.6 million in comparison with Rs. 74 million. Hand tools and small tools was another area of growth and fetched Rs. 76.44 million as compared to Rs. 61 million. The offtake of diesel engines and parts recorded an improvement at Rs. 52.5 million as compared to Rs. 33 million. While the transmission line towers and poles earned Rs. 38 million in 1971-72, their exports increased to nearly Rs. 50 million in the following year. Iron and steel castings recorded Rs. 48 million against Rs. 43 million.

The export improvement in respect of fabricated structurals of steel (including P.S. tanks) was nearly six fold from Rs. 24.5 million to Rs. 132.2 million. Dry and storage batteries fetched Rs. 29 million against Rs. 26 million. There was a sizeable development in the export earning of cement and asbesto cement plant and mill machinery, including concret vibrators, from Rs. 9.5 million to Rs. 27 million. Other industrial machinery including boilers was also exported more at Rs. 38 million as compared to Rs. 22 million.

Electric fans and parts have also witnessed rising trend. They netted Rs. 25 million as against Rs. 16 million in the comparable years. E.P.N.S. ware exports rose at Rs. 22.5 million from Rs. 12.4 million.

The export value of radios and components recorded a marginal growth at Rs. 23 million from Rs. 22 million. Builders' hardware including locks and padlocks also improved in its offtake from Rs. 13 million to Rs. 17 million. Electrical accessories and appliances which has all along been a promising category of export in the engineering group improved its world demand to Rs. 17 million as against Rs. 11.6 million.

Among other engineering products that have recorded sizeable export growth in 1972-73 as compared to 1971-72, were water and sanitary fittings, sugar mill machinery, oil lamps and stoves, scientific and surgical instruments, bright steel bars and shaftings, air-conditioners and refrigerators, water coolers and ice machinery.

The offtake of certain categories, however, fell and they include electric motors, switchgears and transformers; jute textile and knitting machinery; railway coaches and wagons; wire ropes and other wire products, machine tools and office machinery.

INDIA'S EXPORT TRADE IN WIRE ROPES

Iron and steel wire ropes have been on constant export uptrend. In the year 1971-72, the export value totalled Rs. 18.6 million while in the following year (the first three quarters of April-December 1972), it was worth Rs. 12.6 million. The two major export varieties are the black and galvanised wire ropes. The black variety was mainly imported by Bulgaria, Soviet Union, Yugoslavia, Malaysia and Singapore. During 1972-73, the major importers of this category were Yugoslavia, Thailand, Arab Republic of Egypt, Malaysia, Iraq and Kuwait. Yugoslavia and U.S.S.R. were the best customers for the galvanised wire ropes during 1971-72 as well as in the following year.

The wire rope industry in India is included in the priority sector for development. Its production capacity is currently distributed among 9 units with an installed capacity of 44,340 tonnes a year. While the licensed capacity is nearly 45,100 tonnes, additional capacity of about 11,000 tonnes has been recently approved. As against this position of producti capacity, actual production in 1972 was of the order o 20,000 tonnes.

This industry is governed by liberalised licensin policy in respect of future plans for expansion. Excep ing for bicable ropeways, no foreign collaboration considered necessary. Under the current impor policy, actual users are allowed to import wire ropes fo mines on restricted basis. But import of wire rope upto 350 metres is not permitted generally.

Of the two major raw materials required for th industry, namely, high carbon wire rods and zinc, 6 per cent and 33 per cent of the total requiremen respectively are available from indigenous sources.

Ordinary and locked coil wire ropes are produce within the country to meet the full demand and eve to spare for exports. The use of these ropes in mine up to a depth of 350 metres has been approved by th Director General of Mines and Safety, Government o India.

WOOD PRODUCT EXPORTS FETCH MORE

India's overseas supplies of wood (in the rough or roughly squared) reached an all time high level durin the first 3 quarters of 1972-73, fetching foreign exchange to the tune of Rs. 80.70 million. The exports even outstripped the export value of Rs. 69.15 million earne during the full preceding year (1971-72). In fact, the exports rose to this level from Rs. 44.30 million in 1968-69, Rs. 68.30 million in 1969-70 and Rs. 59.4 million in 1970-71.

Among a wide variety of wood exported durin the first nine months of 1972-73 (April-Decembe 1972), rosewood constituted the major item of expor dynamism which brought in as much as Rs. 70. million (24,102 cubic metres), accounting for mo than 87 per cent of the total value. During the full preceding year (1971-72), its exports were of the order of Rs. 57 million (20,300 cubic metres).

Japan was the leading buyer during 1972-73 wh absorbed 14,065 cubic metres valued at Rs.

illion. Next to Japan, Italy was the second impornt purchasing country which imported 5974 cubic etres at a value of Rs. 22.40 million, followed by ederal Republic of Germany at Rs. 4.10 million (1636 ubic metres) and Denmark at Rs. 2 million (1108 bic metres).

During 1971-72, the purchases of these countries ere : Japan Rs. 29.77 million (12035 cubic metres); taly nearly Rs. 19 million (4402 cubic metres); ederal Republic of Germany Rs. 3.25 million (1372 ubic metres) and Denmark Rs. 1.75 million (873 ubic metres).

Sandalwood, the next significant variety brought Rs. 3.52 million in the period under review of 972-73 while walnut wood secured Rs. 1.28 million. ong Kong, Sudan, Singapore and Japan were e leading importers of the former variety while rance, Federal Republic of Germany, Italy and elgium were the prominent markets for the latter.

Teakwood, Benteak, Laurel, Paliwood, Red anders, Sal, Teakwood roughly squared, saw logs, oles and other varieties of hardwood were in the xport range.

TYPEWRITER EXPORTS ON INCREASE

While in the entire year of 1971-72, India's export trade in typewriters totalled Rs. 0.83 million, the first three quarters of 1972-73 witnessed an export growth to the tune of Rs. 1.3 million. Nepal and Malaysia were the leading buyers in 1971-72, whereas the year that followed indicated not only a substantial step up in the offtake of these two markets but Bangladesh emerged as a new destination.

Indian economy has an installed capacity to produce 86,400 numbers of typewriters every year. Its annual production has risen from 28,375 numbers in 1969 to 38,525 numbers in 1970 and 43,360 numbers in 1971. Incidentally, the quantum of exports in the first three quarters of 1972-73 was only 2,030 numbers.

Typewriter manufacture is open for further licensing and foreign collaboration is permitted for portable and electric typewriters. Nearly 97 per cent of the material-mix for its manufacture is available indigenously. A few raw materials such as C.R.C.A. strips/steel, alloy steel strips, spring steel wire and free cutting steel bars are having to be imported.

In the organised sector four units are presently engaged in the typewriter manufacture. They are M/s. Remington Rand of India Ltd., Calcutta with financial and technincal collaboration of M/s. Sperry Rand Co. of U.S.A., M/s. Rayala Corporation Private Limited, Madras with collaboration of M/s. Facit Asia, Sweden, M/s. Godrej & Boyce Manufacturing Co. Private Limited, Bombay and M/s. J. K. Business Machine Ltd., Calcutta. The latter two units do not have any foreign collaboration. Bulk of the production is for standard typewriters. In addition to the installed capacity available, a fresh industrial licence has been recently granted for the manufacture of portable typewriters at a capacity of 15,000 numbers per year. Also letters of intent have been issued to four units for setting up total capacity of 69,100 numbers per annum. Besides the letters of intent, two units have been registered for a capacity of 19,500 numbers a year. With the materialisation of all these schemes, the total projected capacity is expected to reach 190,000 numbers per annum. According to the present indications, the capacity likely to be materialised by 1973-74 will be 103,300 numbers. The Fourth Plan target. for typewriter production is 100,000 numbers every year.

INDO-CZECH PROTOCOL ON ECONOMIC COOPERATION

A protocol on prospective cooperation in commercial, industrial, scientific and technical fields was recently signed between India and Czechoslovakia.

Trade prospects in products like fertilisers, petro-chemicals, steel and oils were discussed by the authorities on both the sides. It was agreed that foreign trade between the two countries will have to broaden into non-traditional items particularly in engineering goods. The possibility of shifting labour intensive industries to India to maximise utilisation of available economic factors of production was also discussed by both the sides.

Further, some specific areas for technical and scientific cooperation in areas like industrial fibreglass, natural and artificial fibres, welding high pressure technology and leather research were indicated. Computer and electronics periphery and machine tools for industrial production cooperation also figured in the discussion. Besides, it was agreed to make available to India the results of research and development in certain social and humanitarian fields like public health, medicine, nutrition and in areas of ecological significance like atmospheric pollution.

Czechoslovakia is one of the important East European countries with which India enjoys improving trade relations. During 1971-72, India's exports to that country were valued at Rs. 305 million as against Rs. 294 million in 1970-71. India's imports from Czechoslovakia amounted to Rs. 101.70 million and Rs. 202 million in the respective years.

FISH EXPORTS UP

India's exports of fish and fish preparations secured foreign exchange amounting to over Rs. 400 million in the first nine months of 1972-73 (April-December 1972) as against the earning at Rs. 282 million in the corresponding period of the previous year.

The composition of exports is as follows : fresh fish and preserved Rs. 381.85 million as against Rs. 260 million and fish in air-tight containers and fish preparations Rs. 18.35 million as compared to Rs. 21.90 million.

During the period under review in 1972-73, frozen or chilled prawn and shrimp, the largest single variety responsible for the bulk of foreign exchange earning, fetched Rs. 367.60 million (2.25 million tonnes). Japan absorbed the maximum at a value of Rs. 205.92 million. It imported about a million tonnes. The next important buyer was U.S.A. which purchased 1.07 million tonnes. at a cost of Rs. 136.77 million. Australia, Denmark, France, Nepal and U.K. were prominent among other purchasing countries.

Fresh, chilled and frozen lobster secured Rs. 8 million while dried and smoked fish and salted wet fish netted Rs. 4.35 million. U.S.A. constituted the leading market for lobster while Sri Lanka, Mauritius, U.K. and Nepal were the prominent buyers of dried fish and salted wet fish. Dried prawn and shrimp, pomfret, powdered prawn and shrimp and other edible fish were also the other items of exports.

Fish in air-tight containers and fish preparations were mainly absorbed by U.K., France, Federal Republic of Germany, Canada, Netherlands, Australia, New Zealand and Belgium.

In the full year of 1971-72, the export value of fish and fish preparations totalled Rs. 414 million.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

ON ELECTRONIC INDUSTRY

India's total production of electronic equipment and components amounted to Rs. 2060 million during 1972-73 as compared to Rs. 1800 million in 1971-72, according to the annual report of the Department of Electronics, Government of India, for the year 1972-73. The production value of consumer electronics and mass communication equipment increased to Rs. 650 million from Rs. 550 million while that of telecommunication equipment rose to Rs. 490 million in comparison to Rs. 420 million, aerospace and defence equipment Rs. 300 million against Rs. 280 million and computers as well as control and instruments was up at Rs. 1 million against Rs. 140 million. The total production of electronic equipment was higher at Rs. 1620 million against Rs. 1390 million while the output value of electronic components was Rs. 440 million against Rs. 410 million.

In the field of mass communication electronics the production of radio receivers has been around 3 million sets and that of radios accounted for Rs. 473 million in each of the years 1971-72 and 1972-73. The production value of television receivers has increased from Rs. 28 million in 1971-72 to Rs. million in the subsequent year. The output value of broadcasting equipment for All India Radio by M/s. Bharat Electronics Limited increased from Rs. 3

llion in 1971-72 to Rs. 36 66 million in 1972-73. In telecommunications sector, the production level of /s. Indian Telephone Industries was Rs. 320.5 million 1971-72 and Rs. 372.4 million in the year that lowed. The total value of production of signalling d telecommunication equipment at railway signalling d telecommunication workshops was Rs. 32 million d Rs. 36 million respectively for 1971-72 and 1972-73. the defence equipment side, the production value M/s. Bharat Electronics Limited was Rs. 226 million d Rs. 240 million for 1971-72 and 1972-73. The rresponding values for M/s. Hindustan Aeronautics mited were Rs. 54 million and Rs. 60 milllon. The mbined production of computers, control and instruents by M/s. Electronics Corporation of India mited, Hyderabad and M/s. Instrumentation Limited, ota was Rs. 70 million in 1971-72 and Rs. 90 million 1972-73.

Progress in respect of television in India has indeed een satisfactory. Presently, there are 10 units in the rge scale sector with a capacity of 105,000 sets per ear and 67 units in the small-scale sector with a total pacity of 191,000 sets. As the Bombay T.V. Station ent on air in October 1972, the demand for T. V. ceivers picked up and the Department of Electronics thorised M/s. Bharat Electronics Limited, Bangalore import 50,000 picture tubes from the East European untries. These imports enabled the indigenous dustry to reasonably cope up with the heavy demand. urther licensing for the manufacture of television ceivers in the large-scale sector has been mainly onfined to public sector agencies such as State ndustrial Development Corporations.

The import content in the T. V. sets made in ndia is now at a relatively low figure of Rs. 90 per set xcluding picture tubes which are supplied by M/s. harat Electronics Limited who import the glass nvelope. It is expected that the indigenous content vill increase further as a result of the efforts made by lectronics Department to license a number of units oth in the organised sector and in the small scale ector for the manufacture of deflection components nd also through the indigenous production of several ther components that are currently imported.

A range of Electronic Desk Calculators of indigenous design has now appeared in the Indian market. A number of enquiries has already been received for their export. The capacity in the organised sector for electronic desk calculators is 42,500 numbers and in the small scale sector about 15,000 numbers per annum. The manufacture of mini-computers and a variety of electronic devices and peripherals such as display devices, key boards and printers, which are essential for the electronic desk calculating industry is being encouraged. Currently, the import content of desk calculators is around 10 per cent. It is expected to be scaled down in the near future.

In the field of computers, the only indigenous computer manufacturing programme in India is that of the Electronics Corporation of India Ltd., Hyderabad. The computer activities at the Corporation commenced in the middle of 1969 and the first indigenous system of TDC 12 was developed at Bhabha Atomic Research Centre. The number of TDC 12 systems installed as at the end of 1972-73 stands at 18. A new model called TDC 312, using integrated circuits instead of discrete components, but architecturally the same as the earlier TDC 12, has been evolved. A larger machine with a longer-word-length, designated TDC 16, using third generation technology is under development. Development work on a medium large computer with a 32-bit word-length and one microsecond cycle time using third/fourth generation technology is also in progress. This machine is meant for time sharing, multi-programming and large scientific and business applications.

The present indigenous computer manufacturing programme is largely based on imported peripherals (input-output equipment) and components such as semi-conductor devices and ferrite core memories. Obviously, a large part of these essential elements of the computer systems is still to be manufactured in India.

In the field of telecommunications, the main emphasis has been to encourage indigenous research, development and production activities. All proposals for import of communication equipment are being carefully scrutinised and in several cases it has been found possible to speed up development work and production of equipment in the country instead of resorting to imports. Presently, the public sector undertakings such as Indian Telephone Industries Limited, Bharat Electronics Limited, Electronics Corporation of India Limited and Hindustan Aeronautics Limited have a good base for the manufacture of communication equipment.

Quite a few of the products for which indigenous development has been undertaken are speeded up. The manufacture of a microwave link for relaying TV programmes from Bombay to Poona has been done successfully and saved import cost of $ 300,000. Apart from immediate savings of foreign exchange, complete capability now exists for producing indigenously all the future requirements of such microwave T.V. links.

There has been a spurt in the electronic exports during the last few years from India. During 1972-73, radios have constituted the single major item of export. An export processing zone has been set up at Santa Cruz near Bombay and it is planned that the zone which is 100 per cent export-oriented will manufacture items with relatively high sophistication. It is expected that the zone's export programmes will soon operate fully.

BALL AND ROLLER BEARINGS INDUSTRY

The ball bearing industry in India was almost static prior to 1969. Till the end of 1965 the industry was tariff-protected. It was subsequently de-protected in view of the fact that it had developed on sound lines and could progress without any tariff protection.

The ball and roller bearing industry presents a typical example of progress in import substitution. The principal raw materials required are H.C.C. steel tubes and bars, L.C. alloy steel bars, CRMS strips, hot rolled steel strips, H.C.C. steel wire rods and wires, L.C. alloy steel wire rods and brass sheets for cages. Of these, H.C.C. wires, H.C.C. bars and L.C. bars are fully available from indigenous sources now. CRMS strips, grinding wheels, honing stones and forged and rolled rings are the raw materials available partially from indigenous sources. However, H.C.C. tubes, L.C. alloy steel tubes, hot rolled steel strips, H.C.C. and L.C. wire rods are among the materials that continue to be imported. The items of low carbon and high carbon chromium steel bars and high carbon chromium steel wires have been satisfactorily developed indigenously and import of these items is not generally permitted.

The alloy steel tubes for the manufacture of bearing races constitute a precision item for which no indigenous capacity has been developed so far. The indigenous manufacture of forged and rolled rings has improved considerably and the rolled rings substitute alloy steel tubes for the manufacture of bearing races of relatively large diameters. About 75 per cent of the grinding wheels and honing stone requirements of the industry is also indigenously available. There is a possibility of indigenous development of CSRM strips of deep drawing quality in the not too distant future. Production of rolling bearings in the organised sector is being undertaken from the raw material stage and import of these components also is not permitte generally. Since the raw materials required vary with the product mix and the manufacturing process, it not possible to clearly specify the percentage of impor and indigenous content in the industry. Broadl speaking, however, the percentage of import content a a whole is only about 20 per cent of the ex-factor value of the total production.

With seven manufacturing companies in the line the installed capacity for the ball and roller bearin industry which is included in the list of priorit industries is about 23 million numbers a year. Actua production in 1971 was of the order of 21.6 millio numbers. The estimated demand by 1973-74 has been placed at 28 million numbers while the capacit likely to materialise by that year would be nearly 2 million numbers.

Foreign collaboration and participation is per missible in this industry excepting for ball bearings Import of bearings currently manufactured in th country is either banned or restricted. All those typ and sizes which are in demand but are not st indigenously produced are being permitted for import During 1971-72, the value of imports was nearly Rs. 12. million. However, nearly Rs. 1.10 million worth o exports have been effected in the year in those categorie for which sufficient indigenous capacity has come to b established.

FACTS ON NON-FERROUS METALS

Notwithstanding the inadequacy of natural dep India has witnessed appreciable progress in devel non-ferrous metals. Although heavy drain of for exchange is involved annually in continued impor these metals, interesting headway has been ma ubstituting the metals with indigenously available aterial. Wherever possible the metals and their roduct variations are also being exported to compen- ate at least partially for the outgo of foreign exchange.

Listed in the core sector of industrial development, ndia's aluminium industry produced nearly 180,000 onnes in 1972. Its installed capacity is currently of ne order of 192,500 tonnes. It is targetted that by 973-74 domestic demand for this metal would be 74,000 tonnes. Its production capacity by then would e 250,000 tonnes and actual production would be 15,000 tonnes.

There are four private manufacturing units engaged the aluminium industry currently and they are I/s. Indian Aluminium Co. Ltd. (New Delhi), I/s. Aluminium Corporation of India Limited Calcutta), M/s. Hindustan Aluminium Corporation imited and M/s. Madras Aluminium private Limited Coimbatore). In addition, there are two public sector nits coming up at Korba and Koyna, both under the ontrol of M/s. Bharat Aluminium Company Limited.

For the production of aluminium, most of the raw aterials are available indigenously excepting the equirements of cryolite, aluminium fluoride, calcined etroleum coke, acid grade fluorspar, carbon cathode locks, low ash metallurgical coke and alloying elements ke magnesium. Among the raw materials available ndigenously are bauxite, caustic soda, lime and electric ower and part requirements of aluminium fluoride, alcined petroleum coke and fuel oil.

The aluminium industry was allowed for expansion oth in public and private sectors to begin with. By he end of the Fourth Five-Year Plan, the public sector nits are to produce 150,000 tonnes.

While E.C. grade aluminium is allowed to be mported on a restricted basis, the aluminium industry as come to contribute its mite in the export context. n 1971-72, the industry exported worth Rs. 34 million, vhile its import bill was Rs. 93 million.

Antimony is another non-ferrous metal listed in the ore sector of development in India. One firm, namely, M/s. Star Metal Refinery Private Limited, Bombay are resently manufacturing the metal. With an installed apacity of 1000 tonnes, the actual production in 1972 was about 900 tonnes. Foreign collaboration for further promotion of the industry is not preferred but further industrial licensing is considered on merits.

Import of antimony is allowed to actual users for manufacturing storage batteries. Of the raw materials required for its production soda ash is available indigenously but antimony ore, fluorspar and woollen filter bags are having to be imported. So far no deposit of the ore has been located in India but it has been decided by the Government to establish a unit in the public sector to meet the gap in supply and demand. The major consideration that has prompted the Government to take this decision was in view of the fact that the plant and machinery for the production of antimony would cost about Rs. 2 million only for a capacity of 1500 tonnes.

Copper is obviously an important non-ferrous metal. Included in the core sector for development, the installed capacity of a public sector unit for copper production is in the neighbourhood of 16,600 tonnes. Its production in 1972 was of the order of 10,265 tonnes. It is estimated that the domestic demand for copper by 1973-74 will be of the level of 124,000 tonnes. By that time it is targetted that the production capacity will have increased to 47,560 tonnes and actual production is to be over 38,000 tonnes.

The foreign exchange outgo on account of copper imports was nearly Rs. 512 million in 1971-72. In the same year copper industry contributed worth nearly Rs. 45 million by way of exports.

In the electrical industry, copper has been substituted by aluminium to a great extent. There is also a possibility of substitution in other fields like air-conditioning and refrigeration.

M/s. Hindustan Copper Limited, a Government undertaking has been set up to produce electrolytic copper with an annual capacity of 31,000 tonnes using the ore from the Khetri and Kolihan mines. The undertaking is also to develop copper deposits at Rakhial mines in Bihar, the Malanjkhan in Madhya Pradesh and the Nallakonda and Dhukonda mines in Andhra Pradesh. In addition to the above, smaller deposits in and around Khetri, particularly those at Dariba near Alwar and Chandwari near Kolihan are also being exploited.

While the installed capacity is currently 6,000 tonnes for lead, its actual production was 2740 tonnes in 1972. The targetted production capacity in 1973-74 has been placed at 5,400 tonnes and the targetted production by that year is to be 3,000 tonnes. Further plans for capacity expansion are to be considered on merits, both in terms of industrial licensing and foreign collaboration. Lead concentrates are available indigenously but sodium cyanide, potassium ethzanthate and cresylic acid (partly) are having to be imported. The only manufacturer of lead is M/s. Hindustan Zinc Limited, Udaipur (Rajasthan) in the public sector.

The ore deposits in Rajasthan are stated to be capable of sustaining nearly double the present installed capacity for the manufacture of zinc. The installed capacity is 38,000 tonnes now. Actual production in 1972 was nearly 25,225 tonnes. M/s. Cominco Binani Zinc Limited, Alupuram (Kerala), is based on the import of zinc concentrates. The production of the public sector project M/s. Hindustan Zinc Ltd., Udaipur is being geared up to raise sufficient zinc ore to feed the plant to reach its installed capacity of 18,000 tonnes per year. In fact, efforts are being made towards increasing the production of the smelter to 36,000 tonnes per annum by raising required quantity of zinc ore. In zinc also actual user imports are allowed in consultation with the Directorate General of Technical Development, Ministry of Industrial Development. The import bill of zinc in 1971-72 was of the order of Rs. 177.3 million. Small quantities of foreign exchange were secured by the industry which worked out to Rs. 70,000 in 1971-72.

The total export effort of non-ferrous metal industries during 1971-72 was of the order of about Rs. 80 million. Principally, copper exports are in the direction of Iran, Hong Kong and Singapore while foreign customers for aluminium are Iran, Singapore, Yugoslavia and Sri Lanka.

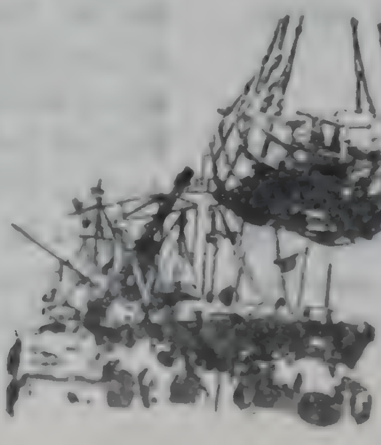
LARGE SHIPS TO BE BUILT BY HINDUSTAN SHIPYARD

India will soon join the select group of developed maritime nations of the world as its large ship construction and repair complex at Visakhapatnam gets ready. M/s. Hindustan Shipyards proposes to construct giant ships upto 260,000 dwt at a large shipbuilding and repairing complex at Visakhapatnam.

Besides placing India in the group of maritime nations, the complex will enable her to compete in the competitive international markets. The proposed complex is estimated to cost Rs. 910 million and expected to deliver its first ship of 260,000 dwt by 1981. Its installed capacity after the completion of project has been placed at 2 ships per annum and earning from shipbuilding has been estimated at Rs. 700 million per annum. Besides ship construction, the complex will also undertake ship repairing and dry docking activities which ultimately will help to earn additionally Rs. 90 million.

The massive valume of the country's export and import trade in recent years has necessitated the constuction of gaint ships. The Shipping Corporation of India and other shipping units in the line have placed orders for tankers and oil carriers with the shipyard.

The shipping target of 4 million GRT has been placed for the Fourth Plan Of this, 3.5 million GRT is to be operative and 0.5 million GRT is to be on order. M/s. Hindustan Shipyard has to its credit contribution of 58 vessels of various types to the Indian fleet. These include 47 ocean going ships, two sophisticated naval vessels, one modern training ship, two passenger ships and a number of harbour crafts apart from cargo liners and bulk carriers. These ships aggregate about 0.48 million dwt or 0.35 million GRT. In quality and workmanship, the ships built by the Hindustan Shipyards have been acclaimed as among the best built anywhere in the world.



SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

AUTOMATIC CONTROL FOR TEXTILE SIZING MACHINE

Most of textile mills in India use conventional sizing machines without automatic controls. But automatic devices in these machines cannot improve quality and efficiency of looms for the production of fabrics. A recent research finding of the Textile and Allied Industries Research Organisation (TAIRO), Baroda has met this gap. The Organisation has developed automatic controls for size box and drying cylinders of a slasher sizing machines used in the textile industry. This product is expected to have potential market not only within India but in neighbouring countries too.

The automatic control developed by the above Organisation comprises size box level control, constant size circulation equipment and automatic temperature controls, both for the size solution in the size box as well as for the drying cylinders. The size box level control is useful to maintain constant level of the size mixture so that the size pick up of the cylinder remains constant. The constant size circulation device maintains consistancy of the cylinder mixture. The size temperature control is used for maintaining constant temperature and viscosity of the size solution. The temperature control device maintains uniform temperature in the cylinders and avoids either over drying and or under-drying of the size cylinders.

All the standard raw materials required for fabrication and machining of the sizing control developed by the above organisatian are available within India.

USE OF COTTON LEAVES IN PRODUCTION OF CITRIC ACID

Cotton leaves can be utilised for the production of citric acid, according to the research undertaken by the scientists of the Indian Agricultural Research Institute (IARI).

Besides making use of cotton leaves available abundantly in the country, indigenous production of citric acid will enable the country to save sizeable amount of foreign exchange every year.

The above research project, sponsored by the Indian National Science Academy, studied the utilisation of by-products of cotton in collaboration with the U.S.S.R. Uzbekistan Academy of Science and the Indian Council of Agricultural Research, (ICAR).

The country annually imports citric acid in sizeable quantity. During 1971-72, the imports totalled Rs. 8.40 million. In the first three quarters of 1972-73 (April-December 1972), the imports were of the order of Rs. 6.30 million. U.S.A., Belgium, U.K., Italy and Netherlands were the prominent supplying countries during 1971-72 while U.S.A., Belgium, Mexico, U.K. and Federal Republic of Germany were the leading exporting markets during the period under review of 1972-73.

PRESSURE SENSITIVE ADHESIVES

The Regional Research Laboratory, Jorhat, has developed pressure sensitive adhesive which can be used in 'self adhesive' articles like envelopes, photo albums, stamp albums. Mere application of finger pressure would suffice to make the articles stick and can be easily relieved also without any damage to the smooth surface of the albums etc.

The process consists in mixing and heating the raw materials, coating the same on a base paper and air drying. The coated papers are covered with a release alkathene sheets and bound into suitable sizes. The adhesive prepared can also be used in envelopes.

Main items of raw material required for the process are base paper, alkathene sheets and adhesive materials. All these are available indigenously. The major items of equipment required are electric mixer, hot plate and coating machines.

DIRECTION PATTERN OF INDIA'S EXPORT TRADE

(In Million Rupees)

Region	1971-72	1972-73	1971-72
		(April-December)	
Africa	**1319.10**	**783.60**	**895.90**
Arab Republic of Egypt	230.50	216.40	141.00
Sudan	517.40	156.40	362.85
Nigeria	98.90	75.65	78.50
Kenya	78,35	53.50	55.70
Tanzania	41.40	28.80	34.75
North America	**3021.95**	**2297.50**	**2228.85**
U.S.A.	2627.90	2076.40	1912.40
Canada	394.00	221.00	316.45
Latin America	**125.80**	**35.00**	**91.75**
Argentina	60.00	6.60	39.70
Other American Countries	**28.00**	**16.70**	**24.30**
ECAFE Countries	**3831.50**	**3491.30**	**2846.80**
Japan	1817.00	1546.60	1321.40
Bangladesh	380.00	590.00	—
Nepal	284.35	252.70	194.20
Iran	197.45	203.85	145.40
Australia	279.25	189.10	200.45
Hong Kong	154.65	140.25	119.85
Singapore	175.15	124.75	135.00
Sri Lanka	212.10	67.75	172.40
Other Asian and Oceanian Countries	**625.25**	**583.10**	**449.70**
Kuwait	106.85	120.45	75.45
Iraq	97.10	85.80	82.20
Saudi Arabia	111.25	100.65	74.35
East Europe	**3434.80**	**3426.30**	**2509.35**
U S.S.R.	2086.75	2268.50	1585.35
Czechoslovakia	304.50	329.60	195.00
Poland	199.15	297.20	114.60
Bulgaria	154.80	123.10	99.65
German Democratic Republic	179.50	107.70	143.20
Yugoslavia	243.70	95.00	188.90
European Economic Community Countries	**1237.70**	**1533.45**	**848.20**
Federal Republic of Germany	367.50	443.00	262.60
Italy	214.50	345.15	163.10
France	241.25	315.55	163.25
Netherlands	147.15	238.80	99.25
Belgium	240.30	190.95	160.00
European Free Trade Association Countries	**1880.00**	**1580.45**	**1372.65**
U.K.	1680.80	1350.45	1234.35
Sweden	60.30	109.00	36.55
Switzerland	74.80	57.75	55.75
Other European Countries	**131.20**	**156 00**	**98.20**
Turkey	20.10	47.70	18.85
Ireland	57.85	59.40	48.15
Spain	31.00	28.20	14.65
Total of all Countries (excluding re-exports)	**15635.45**	***11365.75**	**13941.10**

*This excludes substantial exports to Bangladesh which were not recorded completely.

Source : Department of Commercial Intelligence and Statistics, Calcutta.

PROFILE ON CABLES AND WIRES INDUSTRY

Indian industry has established a competent sector for the manufacture of most of the categories of cables and wires. Included in the priority list of industries, its manufacturing range includes ACSR/AAC conductors, P.I.L.C. power cables, PVC power cables, enamelled winding wires and strips, winding wires and strips covered with paper and VIR/PVC cables and wires.

The ACSR and AAC conductors are manufactured presently by two public sector undertakings and 38 private sector units. Their licensed and installed capacity is of the order of 103,950 tonnes per year; estimated production in 1972 was in the neighbourhood of 81,560 tonnes. The Government of India follows a liberal licensing policy in respect of proposals for expansion in this line. Neither foreign collaboration nor imports are allowed. As aluminium and steel core wires - the major raw materials--are available indigenously, no raw material is allowed to be imported. The estimated demand by 1973-74 is of the order of 100,000 tonnes. In view of the sufficient capacity available and with the rising trend in production year after year, it is expected that estimated demand will be fully met. The production improvement every year becomes evident from the fact that it was 57,460 tonnes in 1968, 58,120 tonnes in 1969, over 65,000 tonnes in 1970, about 75,720 tonnes in 1971 and 81,560 tonnes in 1972. The entire production of ACSR/AAC conductors is supplied to State Electricity Boards and for exports. These are now reserved for small-scale sector up to sizes 19 strands.

PILC power cables are currently manufactured by seven private units. Their licensed capacity is 10,950 kilometres while actual capacity installed is 8,640 kilometres. Estimated production for the year 1972 was 2,670 kilometres. Indigenous demand by 1973-74 for all types of power cables including PVC and PILC power cables has been estimated at 25,000 kilometres. The industrial policy of the Government of India offers liberal treatment for future proposals of expansion. Also foreign collaboration proposals would be considered for the manufacture of power cables of higher voltage. Imports of these cables are not permitted up to 33 kv voltage rating (PILC cables). Excepting for limited quantities of aluminium and steel/tape/wire, most of the raw materials required for the manufacture of these cables are available indigenously. In India, earlier PILC power cables were manufactured with copper conductors using lead and paper. But now copper has been substituted by aluminium and even lead and paper have been substituted for voltage up to ratings 6.6 KV by P.V.C. which is indigenously available. The voltage range for substituting P.V.C. instead of lead and paper is also being increased which will result in substantial foreign exchange savings. In its place, cross linked polyethylene cables are expected to be taken up.

Manufactured by a public sector unit in Kerala, M/s. Traco Cables Limited and nine private units, the production of PVC power cables in 1972 was estimated at 16,220 kilometres. The quantum of production has been constantly on the rise 11,680 kilometres in 1968, 13,400 kilometres in 1969, 14,050 kilometres in 1970 and 15,000 kilometres in 1971. Interestingly, the production levels achieved in 1971 and in 1972 were higher than the installed capacity of 14,600 kilometres. The licences/registered capacity is 15,040 kilometres. PVC power cables industry also included in the list of priority items for which liberal licensing policy is offered by the Government of India. It is recognised that the foreign collaboration might be required for cross linked polyethelene cables which is a better material for higher voltages. The import of these cables is, however, not allowed. In fact, this variety of cables has in other cases made a good headway in the export markets. PVC cables were till recently manufactured using copper, lead and paper. Aluminium has been successfully substituted in place of copper while even lead and paper have been substituted by PVC for power cables up to 6.6 kv.

For enamelled winding wires and strips the demand for 1973-74 has been estimated at 20,000 tonnes. With one public sector unit and 25 private companies in the field of manufacture, the installed capactiy is of the order of 18,440 tonnes and the licensed capacity is about 21,400 tonnes. Actual production was nearly 14,000 tonnes in 1972 which was a sizeable improvement over 13,000 tonnes in 1971, 11,300 tonnes in 1970 and 10,300 tonnes in 1969. No foreign collaboration is allowed in respect of the winding wires and strips although liberal treatment is offered for further licensing. Under the current

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import policy, the import of enamelled wire (44 swg) and finer wires are only permitted and that too on restricted basis. Notwithstanding the fact that copper, a precious metal item constitutes more than 90 per cent of the material content in these wires, reasonable quantities have been exported during the last few years. Also large indirect exports took place as these wires are used in sufficient quantities in electrical goods, such as electric motors, transformers, fans and electronic equipment.

Winding wires and strips covered with paper was produced to the tune of 5250 tonnes in 1972. The installed capacity for these wires is over 15,500 tonnes. The estimated demand by 1973-74 is 10,000 tonnes. In view of the gap between the present rate of production and the future demand potential, the industrial licensing policy allows for expansion in the industry although foreign collaboration will not be permitted. As in the case of enamelled wires and strips, paper covered winding material has also been exported in some quantities despite the fact that they are heavily copper based. VIR/PVC cables and wires are reserved for the small scale sector in the country for domestic wiring for low power applications which constitutes the major portion of production in the line. Two public sector units and 24 private manufacturers have an installed capacity of 1113 million core metres which is almost equivalent to the licensed capacity. Estimated production in 1972 was 677 million core metres. For the manufacture of these cables and wires also liberal licensing is offered for future expansion programmes. This variety of cables is also being exported in sufficient quantities mostly with copper conductors. In small quantity, copper and other chemical items are required to be imported for the manufacture of this category of cable while aluminium and PVC are available indigenously. The substitution of copper with aluminium was successful excepting for certain applications such as control cables where copper conductors are to be essentially used. Besides the units in the organized sector mentioned above, there are a large number of units in the small scale sector.

While such has been the profile of categorywise production in the cables and wires industry, it would be interesting to examine their export capacity. According to the Engineering Export Promotion Council, Calcutta, the export earning of electric wires and cables totalled Rs. 126 million in 1972-73 as compared to Rs. 112.5 million in 1971-72. This group in fact, is the most leading among engineering product exports next only to automobile and auto parts. The major items of exports included insulated cables and wires, bare aluminium conductors, bare copper conductors and other types.

The major importing countries of insulated cables and wires have been the Soviet Union, Sri Lanka, Qatar, Federal Republic of Germany and Australia. For bare aluminium conductors, U.S.S.R., Arab Republic of Egypt, Sudan, Iran, Tanzania, Kuwait and Thailand have been the major destinations. For bare copper conductors the main markets are Iran, Kuwait, Singapore and Hong Kong. ☐

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ELECTRICAL MACHINERY ACTIVE IN EXPORT TRADE

India's export trade in electrical machinery has revealed consistent uptrend in recent years. From Rs. 133 million in 1968-69, the export value rose to Rs. 146 million in 1969-70, Rs. 161 million in 1970 71 and further to Rs. 187 million in 1971-72. During the first three quarters of 1972-73 (April-December 1972), the exports reached a level of Rs. 183 million.

The composition of exports during the first nine months of 1972-73 was : equipment for distributing electricity Rs. 56 million; electrical power machinery and switchgears Rs. 41 million; domestic electric equipment Rs. 21.5 million; telecommunication equipment Rs. 22.50 million; electric apparatus for medical purposes and radiological apparatus Rs. 0.50 million and other electrical machinery and apparatus Rs. 41 million.

U.S.S.R., Kuwait, Singapore, Qatar, Iran, Malaysia, Sri Lanka, Federal Republic of Germany, Iraq, Poland, Bangladesh, Nigeria, Nepal, Tanzania, Thailand, Bulgaria, Dubai, Australia, Sudan, Yemen Arab Republic and U.K. are the principal customers.

M/s. NGEF Limited (New Government Electric Factory), Byappanahalli, Bangalore, one of the leading manufacturers and exporters in the line, exported a wide range of electrical items including transformers, electric motors and their parts, switchboards, controlgears and switchgears, LT and HT fuses and power semi-conductors to the tune of nearly Rs. 6 million during 1971-72.

The Bangalore firm has recently bagged a sizeable export order of a value of Rs. 10 million from the German Federal Republic for the supply of electric motors. It is claimed to be the largest single export order of electric motors received by any Indian firm so far.

The range of products of NGEF includes a large number of electric items covering transformers, motor switchgears and other goods in the line. Besides physical exports, the firm diversified its operating range to include project business which involves planning, supply, erection and commissioning of electrical equipment on a turnkey basis for traction substations, electrolysis plants, refineries and fertiliser plants.

In the organised sector, India's production of transformers during 1972 was of the order of 10.8 million KVA. There were 29 units engaged in the production during the year and their combined installed capacity was 9.26 million KVA. In the same year, the installed capacity of electric motors at 3.1 million HP was spread over 33 units and their total production was estimated at 2 million HP. As compared to the installed capacity of 0.38 million numbers in the field of motor starters, 11 units in the line produced 0.37 million numbers while the production of switchgears and control gears of 45 units was estimated at Rs. 472 million.

INDIAN BUSES TO GUYANA

M/s. Tata Exports, Shivsagar Estate Annie Besant Road, Bombay, have recently bagged their first ever single export contract from Guyana for the supply of buses valued at Rs. 6.7 million. This is a fresh indicator of the confidence placed by customers abroad on the export ability of the firm. With this export order, the firm is confident of trebling it export effort from the present level of Rs. 3 million per annum. A noted manufacturer and exporter of automobiles and parts, the firm manufactures sizeable quantity of trucks and buses, which are eagerly sought by importers abroad, particularly the Arab Republic of Egypt.

Automobile industry is the leading sector of India's engineering industry. During 1971-72, India-made road motor vehicles netted foreign exchange amounting to Rs. 120 million. Even during the first three quarters of 1972-73 (April-December 1972), the exports brought in Rs. 98 million. Arab Republic of Egypt, Sri Lanka, Nigeria, Yugoslavia, Nepal, Bahrein Islands, Singapore, Afghanistan, Iran, Iraq, Indonesia, Malawi, and Uganda are the prominent destinations.

The industry offers a broad range of vehicles including trucks, buses, lorries, motor cars, jeeps, motor cycles, scooters, tractors, breakdown lorries and a complete range of accessories and parts. Starting with mere assembly operation of imported vehicles, the industry has expanded to undertake manufacture of different types of vehicles, so as to cope up with the rapidly changing demands of customers at home and abroad. Production of the industry is also rising yea after year. The output of commercial vehicles which was of the order of 24,800 numbers in 1961 rose to 37460 numbers in 1972 while car production increased from 21,660 numbers to 40,040 numbers. The production of other vehicles too registered increase during the period. For instance, the output of motor cycles rose from 8640 numbers (1961) to 47,560 numbers (1972); mopeds and scooterettes from 2635 numbers to 21,610 numbers; three wheelers from 1270 numbers to 9790 numbers and scooters from 12,820 numbers to 64,330 numbers.

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RENOVATED TEXTILE MILLS EARN FOREIGN EXCHANGE

The textile mills which are currently managed and controlled by M/s. National Textile Corporation (NTC) have succeeded in exporting textiles valued at Rs. 60 million during 1972-73.

NTC took over the management of 103 sick mills of which the 86 were put into operation. These mills, besides, supplying textiles to the domestic market brought in sizeable amount of foreign exchange.

A scheme for modernising the taken over mills, estimated to cost about Rs. 1000 million, has been prepared by the NTC and an amount of Rs. 190 million has already been released for the purpose. NTC today controls 17 per cent of the total textile mills in the country accounting for 10 per cent of the total loomage of the entire textile sector and manufactures about 25 per cent of the total production of controlled cloth in the country.

India's total export trade in cotton manufactures (excluding yarn, thread and clothing) stood at Rs. 1000.45 million in 1971-72. In the first three quarters of 1972-73, the export value was Rs. 914.30 million.

INDUSTRIAL MACHINERY TO WORLD MARKETS

Recent years have witnessed India gradually emerging as a competent manufacturer of a comprehensive range of industrial machinery catering to most of the requirements of the domestic industry. The technical competence and expertise developed by this sector has enabled the country not only to cope up with the growing volume of domestic demand but to leave a sizeable surplus for exports.

Among a large number of units in the line, the success story of M/s. T. Maneklal Manufacturing Company Limited, Vaswani Mansions, Dinshaw Wacha Road, Bombay-1, deserves mention. The firm's export turnover amounted to Rs. 4.5 million during the year ended May, 1972.

Its export range includes textile bleaching and dyeing plants, textile machinery, rubber lined vessels, plants for chemical, rayon and pharmaceutical industries, industrial rubber and ebonite rollers for all industries, and plastic injection moulding machines. Besides, the firm has recently developed open width washing machines which can improve the efficiency and speed as well as achieve economy in the processing of cloth. It has also undertaken recently a trial order for fabrication and rubber lining of caustic soda cells.

In the field of import substitution, the firm's achievement is noteworthy. It has to its credit the manufacture of special metal reinforced vacuum hoses which were hitherto being imported into the country. Further, the firm has active plans to commence the manufacture of plastic coated fabrics mainly required by the automobile industry, railways, footwear industry and furniture manufacturing sector.

During 1971-72, India's exports of machinery (other than electric) totalled Rs. 242 million. Of this, textile and leather machinery earned Rs. 55 million, power generating machinery (other than electric) Rs. 55.20 million, metal working machinery Rs. 22.70 million, office machines Rs. 21.45 million, machines for special industries Rs. 17.35 million, agricultural machinery and implements Rs. 3.65 million and machinery and appliances (other than electrical) and parts were also active in exports.

Electrical machinery, apparatus and appliances netted Rs. 186.75 million in 1971-72.

COTTON TEXTILES ON EXPORT FRONT

Cotton Textiles occupy an important position in India's export trade. The export value of cotton manufactures (excluding yarn, thread and clothing), which was over Rs. 866 million in 1969-70 rose to nearly Rs. 975 million in 1970-71 and further reached Rs. 1000 million mark in 1971-72. Even during the first three quarters of 1972-73 (April-December 1972), it fetched about Rs. 915 million, registering an impressive rise over the export value of Rs. 698 million earned during the corresponding period of the preceding year.

The export range includes lungis, dhoties, shirtings, coloured sarees, bleeding Madras handkerchiefs, bedtickings, furnishing cloth, poplin, broadcloth, sheeting card yarn, twill satin, umbrella cloth, canvas card yarn and combed yarn, drill denim, flanellette bleached and unbleached, muslin, voils, long cloth, handprinted sarees, knitted and woven cotton fabrics, tulle, lace, embriodery, ribbon trimmings and other small wares of cotton, leather imitation cloth, cotton fabrics coated with artificial plastic materials, cotton bags and sacks for packings, tarpaulin tents, travelling blankets, bed sheets of all types, handloom napkins, pillow covers, table cloth covers, towels (handloom and powerlooms), bedlines, curtains and made-ups.

In the long list of buying countries, U.S.A., U.K, U.S.SR., Afghanistan, Iran, Netherlands, New Zealand, Nepal, Bulgaria, Rumania, Sudan, Canada, Japan, Poland, France, Sweden and Australia are the prominent ones.

M/s. Anglo-French Textiles Limited, (formerly known as Rodier Mills) Cuddalore Road, Mudaliarpeth, Pondicherry, one of the firms in the line is stated to have exported cotton textiles to the tune of over Rs. 46 million during 1972. Quantumwise, the Pondicherry firm supplied overseas about 20.3 million metres, accounting for about 45.6 per cent of its total sales of cloth.

The firm has active plans for diversification and modernisation involving installation of sophisticated machinery. Recently, it has installed wet processing machinery which has already gone on stream. The firm's production target of controlled cloth has been set at 4.3 million square metres for the year 1972.

The firm has 48,656 spindles and 1188 looms. It is also equipped with a power plant and dyeing and bleaching plants. Its range of manufactures includes cotton yarn from 65 to 40s counts and 20s, yarn from staple fibre, shirting, long cloth, sarees, dhoties and other items in the line.

As on July 1, 1972, the total number of mills in India was 684. Of this 394 were spinning mills and 290 were composite mills. The total installed capacity at 18.31 million spindles included 6.06 million spindles for the spinning sector and 12.25 million in the composite sector. Looms in composite mills were of the order of 207,800 numbers.

INDIA BAGS FIRST PRIZE AT SABA FAIR

For the first time, India has won first prize in Saba International Trade Fair at Dar-es-Salaam (Tanzania). Thirteen countries including U.K., U.S.S.R., Federal Republic of Germany, Italy and Rumania participated in the Fair.

Fiftysix Indian parties have participated in the fair. Trade enquiries received at the India Pavilion included those for small spanners and mobile pre-mix plants for road construction.

India has bagged prizes at three other International Trade Fairs and Exhibitions abroad recently. At Barcelona (Spain) International Trade Fair, Indian Pavilion was one of the six that were awarded trophies for excellence in display. The other countries included Czechoslovakia, Poland and Italy.

At Ndola Trade Fair, (Zambia), India was awarded the second prize. Earlier in April, Indian participation received commendation at Foire De Paris, France. It was among the five countries marked for good display.

Several electronic and engineering items were on display in the India Pavilion in these exhibitions. The items included heavy and light engineering goods, sophisticated electronic products, machine tools, hand tools, consumer durables, automobile ancillaries and a variety of products for industrial uses.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT TRADE IN BATTERIES

While India's export trade in batteries and accumulators totalled Rs. 25.6 million during 1971-72, it was Rs. 24.4 million even during the first three quarters of 1972-73.

In 1971-72, battery exports alone were about Rs. 14.4 million. Of this, Rs. 2.7 million worth of flash light batteries were exported mainly to Sudan. Other dry cell primary batteries which secured Rs. 8.6 million were primarily sold to Sudan and Nepal. Wet cell primary batteries were in the direction of German Democratic Republic, Iraq and U.S.S.R. and earned Rs. 2 10 million in foreign exchange.

Accumulators were principally imported by U.S.S R., German Democratic Republic, Burma, Kuwait and Iraq.

In the first three quarters of 1972-73, the export value of batteries was Rs. 12.5 million. As in the earlier year, Sudan, U.S.S.R. and Nepal were the important buyers of dry cell primary batteries while German Democratic Republic and Poland were the principal customers for wet cell batteries. The leading customers for accumulators were U.S.S.R. and Poland.

The Indian economy has an installed capacity to produce about 540 million numbers of dry battery cells. There are five manufacturing units, namely, M/s. Union Carbide India Limited, Calcutta, Madras and Hyderabad; M/s. Estrela Batteries Limited, Bombay, M/s. Havero Industries Limited, Bombay, M/s. Geep Flashlight Industries Limited, Allahabad and M/s. Toshiba Anand Batteries Limited, Cochin (Kerala). Actual output in 1972 was nearly 620 million numbers valued at Rs. 343.22 million. It is estimated that domestic demand will increase to 1150 million numbers by 1973-74. Production also is expected to attain full pace by that year. The industry is open for industrial licensing on merits. So also in respect of foreign collaboration proposals. As an import substitution measure, the Government of India have approved schemes for the manufacture of certain raw materials which are being currently imported such as cabon rod, acetylene black and electrolytic manganese dioxide. This progress in import substitution indeed results in foreign exchange savings. As it is, among the raw materials that are available indigenously are ammonium chloride and sodium chloride.

As in respect of dry cell batteries, storage batteries are also included in the priority list of industrial development. There are seven manufacturing units, namely, M/s. Associated Batteries Makers Eastern Limited, Calcutta (two units), M/s. Standard Batteries Limited Bombay, M/s. Amco Batteries Limited, Bangalore, M/s. Bharat Battery Manufacturing Co. Pvt. Limited, Calcutta, M/s. Mysore Electro-Chemical Industries Limited, Bangalore and M/s. Standard Batteries Limited, Oldham Division, Madras. These units have an installed capacity at nearly 1.3 million numbers. In 1972, their production was 1.10 million numbers at a value of Rs. 205 million. The import substitution effected in this industry is of the order of 80 per cent of total raw material content. Lead and antimony are the major substances being imported while indigenously available raw materials include sulphuric acid, antimonial lead, lead oxide, synthetic rubber, PVC resin, paraffin wax and furnace oil. It is estimated that by 1973-74 the demand for storage battery production will reach 2.25 million numbers. Against the current licensed registered capacity of 1.52 million numbers, the total capacity likely to materialise by that year has been estimated at 2.2 million numbers.

EXPORTS OF INSTRUMENTATION BRIGHTEN

A major improvement is recorded in India's export trade in scientific, medical, optical measuring and controlling instruments and parts during 1972-73. The export value of these instruments during 1971-72 totalled Rs. 16.5 million while even in the first three quarters of 1972-73 (April-December 1972), it touched a level of Rs. 22.7 million.

The group of medical instruments which fetched Rs. 6.6 million in the entire year of 1971-72 secured nearly Rs. 6.7 million in the first nine months of the subsequent year. Surgical forceps, knives stethoscopes, and mechinco-therapy appliances are among the products that have mainly improved their export performance in this group. U.S.S.R. increased its offtake from Rs. 2.1 million in 1971-72 to Rs. 2.3 million in the first nine months of year that followed.

Another category of instrumentation active in export field is the group of measuring, controlling and scientific instruments. This group has earned Rs. 4.7 million in the first three quarters of 1972-73 as compared to Rs. 3.92 million in the whole year of 1971-72. A wide variety of products is active on export front in this category and they include surveying, drawing, measuring instruments, rods and tapes, clinical thermometers, physical or chemical analysis instruments and parts.

In the organised sector of the Indian economy, there are nine manufacturing units of which one was in the public sector, namely M/s. Indian Drugs and Pharmaceuticals Limited, (Surgical Instruments), Mdaras. The production of these instruments was of the order of Rs. 20 million in 1972. The installed capacity in the line is about Rs. 47 million. Further expansion for the production of these instruments is permitted. Foreign collaboration is allowed and imports are considered on merits.

For optical instruments, there are twelve manufacturing units, three of which are in the public sector, namely, M/s. Government Electronic Factory, Bangalore, National Instruments Limited, Calcutta and the Government Precision Instrument Factory, Lucknow. The optical instruments industry has an installed capacity worth Rs. 68.5 million. Its actual production was over Rs. 34 million in 1971. As in the case of medical instruments, optical instruments also attract liberal industrial policy and foreign collaboration is allowed. In respect of imports, only sophisticated types of instruments are allowed to be imported. Nearly 90 per cent of the raw materials required is available from indigenous sources and the rest is being imported.

Another major instrumentation sector is that of X-ray and electromedical equipment whose installed capacity is worth Rs. 39 million per year. Its actual production was worth Rs. 30.2 million in 1972-73. There are eight manufacturing units in this line of production.

As a measure of import substitution, X-ray tubes are now being produced in India by M/s. Bharat Electronics Limited, Bangalore and all the manufacturers are using indigenous tubes. The indigenous content for the production of X-ray is 80 to 82 per cent and that for ECG is 90 per cent.

Another category of instruments is house service meters. The installed capacity for poly-phase meters is 430,000 numbers. The estimated production in 1972 is 1.53 million numbers which was 2.85 million numbers in 1971. Excepting for pin for tope bearing and pivots, most of the components required for the house service meters industry are being made indigenously. The percentage of indigenous content so far achieved is nearly 85 to 90 per cent.

AIR COMPRESSORS FOR EXPORT

Larger offtake by the Arab Republic of Egypt and the emergence of fresh markets in Iraq, Poland and Italy have improved India's export trade in air and gas compressors during 1972-73 as compared to the preceding year. While the export value was only Rs. 2.55 million in 1971-72, even the first three quarters of 1972-73 revealed an uptrend at Rs. 3.12 million. Arab Republic of Egypt and Iraq together absorbed about Rs. 1.2 million worth in the period reviewed during 1972-73.

Quantumwise, the export during 1971-72 was 2555 numbers while in the first nine moths of the subsequent year, it was only 1040 numbers. This would indicate an improvement in the unit value of export prices for product.

Besides the aforementioned markets, Australia, France, Japan, Spain and Sudan also figure in the community of importers of this product from India.

The air compressors industry in India is spread over 13 manufacturing units currently. Of them, three are in the public sector, namely, M/s. Bharat Heavy Electricals Limited, Hyderabad, M/s. Bharat Pumps and Compressors Limited, Naini, Allahabad and M/s. Garden Reach Workshop, Calutta. In the latter two firms, production has not yet started. Most of the manufacturing units either in the public or private sectors have access to foreign collaboration from countries like Sweden, U.K., France, U.S.A., Japan, Switzerland and Italy.

India's installed capacity for air compressors is presently in the range of 11,000 mumbers per year. Recently, additional capacity of 160 numbers for air compressors and 90 numbers for gas compressors has been approved. Further M/s. Bharat Pumps and Compressors Limited have been approved to produce 3200 tonnes per year. Thus, the total capacity expected to take shape by 1973-74 would be about 11,200 numbers, plus 3200 tonnes. Actual production in 1972 was of the order of 5200 numbers. Under the current governmental policy, the air compressors industry is open for further industrial licensing, even foreign collaboration would be considered on merits in respect of potential proposals for expansion and import trade is allowed to actual users.

The air compressors industry is a neat expample of progress achieved in terms of import substitution. The indigenous content for high capacity compressors upto 4500 c.f.m. and 10 Atms. discharged pressure, is in the range of 70 to 75 per cent. But the indigenous content is far higher (90 to 99 per cent) for smaller type of compressors. Alloy steel strips, lubricating oil pumps, blades for centrifugal compressors and piston rings are among the raw materials being imported for the manufacture of compressors. Locally available materials are grey cast iron castings, steel forgings, steel sheets and plates and steel rounds.

The establishment of M/s. Bharat Pumps and Compressors, Allahabad is expected to facilitate the manufacture of heavy duty compressors for process applications such as in chemical, petrochemical and fertilizer industries.

EXPORT TRADE IN RAZOR BLADES

Sudan has been the most important market for safety razor blades made in India. This market purchased worth Rs. 1.10 million during 1971-72, in which year the total export of the item was over Rs. 1.60 million. Vietnam Republic and Ethiopia are among the other buyers.

Poland has emerged as an important customer in recent months. This market imported Indian blades worth Rs. 250,000, in the first three quarters of 1972-73. The total export value in the period was nearly Rs. 1.10 million.

There are seven manufacturing units in India today engaged in the production of safety razor blades. One of them is seeking collaboration with M/s. Wilkinsons Sword Limited, U.K., and the proposal of collaboration is under active consideration by the Government of India. Already a Bombay firm has taken up collaboration with M/s. Perma-Sharp Limited of the U. K. The rest of the units function on wholly indigenous know-how.

The current installed capacity of blades is about 2170 million numbers per year. Actual production is about 1090 million numbers (1972). Under the current policy of the Government of India, foreign collaboration is permitted on a royalty basis for the razor blade industry.

About 50 per cent of the raw material content for the industry is available indigenously. Materials like cold rolled high carbon razor blade steel strips, stainless steel tubes and grinding wheels are, however, being imported.

Import of safety razor blades into India is fully banned in view of the adequate domestic base, which can meet not only the demand within the country but can create reasonably sizeable surplus for export.

SOVIET UNION BIGGEST MARKET FOR INDIAN FLASKS

Of the nearly Rs. 5 million export market for Indian vacuum flasks during 1971-72, the Soviet Union accounted for over Rs. 3.7 million. Quantitywise, U.S.S.R's offtake was 504,460 numbers out of 656,440 total numbers exported.

In the first three quarters of 1972-73, the Soviet Union's import was of the order of Rs. 2.9 million out of India's total export earning of flasks of Rs. 4.24 million.

Besides the Soviet Union, Poland and Bulgaria are the principal customers. Together they absorbed worth Rs. 0.4 million in 1971-72 and nearly Rs. 1 million in the first three quarters of 1972-73.

Belgium is a recent addition to the list of active importers of Indian flasks abroad.

FOREIGN EXCHANGE FROM OIL PRESSURE STOVES

Even oil pressure stoves are contributing their mite to India's export trade. Their export value was of the order of Rs. 2.6 million during 1971-72. In the first three quarters of 1972-73, the value was worth Rs. 1.7 million. The important importers were Libya, Saudi Arabia, Sudan, Muscat and Dubai in 1971-72. In the subsequent year, the important buyers were Libya, Dubai and Saudi Arabia in that order.

In fact, the entire group of oil lamps and stoves (pressure and non-pressure) is estimated to have improved export earning to the level of Rs. 11.4 million in 1972-73 as compared to Rs. 8.5 million in the preceding year, according to the Engineering Export Promotion Council, Calcutta.

The installed capacity for oil pressure stoves in India is in the neighbourhood of 35,000 numbers. Actual production in 1972 was over 20,100 numbers. Neither foreign collaboration is allowed in the industry nor import of the product is allowed. There are only two manufacturing units, M/s. Racek Industries Private Limited, Bombay and M/s. J. N. Sharma and Sons, New Delhi. The industry has achieved 95 per cent in indigenous content. Of the raw materials that are imported are brass tubes while B. P. sheets, brass pipes and tubes, M.S. rods and brass rods are available indigenously.

EXPORT DYNAMISM IN ELECTRIC FANS

India's export trade in electric fans and parts during 1972-73 has been estimated at Rs. 25 million by the Engineering Export Promotion Council, Calcutta as compared to only Rs. 15.6 million in 1971-72. Ceiling fans constitute the major category of exports. Iraq, Kuwait and Nigeria are the three distinguished markets for the ceiling fans. Other varieties available for export are air circulators, pedestal fans, rail carriage fans, table fans and their parts.

Indian industry has an installed capacity to produce 2.75 millions of electric fans every year. The quantum of production rose from 1.3 million numbers in 1967 to 1.4 million numbers in 1968, 1.5 million numbers in 1969, 1.6 million numbers in 1970, nearly 2 million in 1971 and 2.5 million in 1972. With 16 manufacturing units engaged in fan production, domestic demand is expected to go up to 2.5 million numbers by 1973-74. With more production capacity under installation, the total capacity likely to be availbale by that year is expected to be 2.85 million numbers.

In view of the progress made by the electric fan industry, no foreign collaboration is considered necessary in respect of future proposals for capacity expansion. As it is, three existing manufacturers have financial collaboration from U. K. firms and one unit has collaboration from a U. S. company. The encouraging trend in production growth has enabled the Government of India to ban imports of fans.

The electric fans sector is a typical example of Indian industries where maximum import substitituion has been achieved. Further import substitution is dependent upon indigenous availability of copper and special insulating materials. As it is, copper in the form of wires and about 0.05 per cent of the requirement of insulating material is being imported. Otherwise all the other raw materials such as electrical steel hot rolled sheets, aluminium, the best part of insulation material requirements and M. S. rounds are all available indigenously.

INDO-BANGLADESH TRADE ACCORD

A new three-year trade accord providing for balance of trade and payment arrangement has recently been concluded between India and Bangladesh.

The new accord envisages a total of Rs. 305 million worth of exports either way annually. In terms of the Agreement, Bangladesh will import coal worth Rs. 60 million, tobacco (unmanufactured) Rs. 52 million, raw cotton Rs. 75 million, cotton yarn Rs. 20 million, movies Rs. 1 million and cotton textiles Rs. 10 million. Other items of import include bicycles and parts, stone boulders, books, newspapers, magazines, ayurvedic and unani medicines, herbs, chemicals, pharmaceuticals, lime, lime stone and spices.

India's imports from Bangladesh during the first year of the Agreement will include raw jute worth Rs. 200 million, fresh fish Rs. 35 million, newsprint Rs. 41 million, skin and semi-tanned skin Rs. 10 million, ayurvedic medicines Rs. 5 million, books Rs. 2.2 million, movies Rs. 1 million, pharmaceutical products Rs. 300,000 and spices Rs. 500,000.

The new Agreement comes into effect from September 28, 1973 when the present limited payment agreement, which was extended twice will come to an end. It will be in force for three years, extendable by mutual consent. It is intended to provide an overall umbrella under which specific arrangements could be worked out for expanding the volume of trade and solving the specific problems that might impede the flow of trade between the two countries.

RELAXATION ON EXPORT OF COTTON YARN

The Government of India have decided to relax ban on export of certain varieties of cotton yarn to all destinations.

The relaxation is made in view of the comfortable demand and supply position of cotton yarn of lower counts. The relaxation is in respect of cotton yarn in counts seventeens and below; folded cottonyarn of 2 ply in counts seventeens and below; folded cotton yarn of 3 ply and higher plies in all counts; blended yarn containing 10 per cent or more of man-made cellulosic or non-cellulosic natural silk of woollen fibre; mixed yarn that is where the same hank or cone contains yarn of different counts and hard waste.

Ban on exports of other varieties of cotton yarn will be continued till July 31, 1973 or till such further time as Government might decide in public interest. If supply position warrants, export of limited quantities of these categories of yarn would also be permitted from August 1973.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PRODUCTION PROGRESS IN ELECTRONIC COMPONENTS

Most of the electronic components are included in the list of core industries in India. They include transistors and diodes, receiving valves, carbon film resistors, potentio meters, gang condensers, band change switches, paper capacitors, ceramic capacitors, plastic film capacitors, electrolytic capacitors, ferrite rods and cores and permanent magnets. Industries such as loudspeakers are included in the priority sector.

The electronic component industries receive special treatment from the point of view of industrial licensing. Most of the types of electronic components are now manufactured within India. Each component, however, has a huge variety within itself and the requirements for some of the varieties/specifications are meagre at present and therefore import is allowed for these types on restricted basis. It is hoped that as time passes, more and more varieties will be manufactured depending upon their demand and imports will be banned.

The raw material requirements of electronic components industry are highly specialised. By and large, a majority of the raw materials are available indigenously but the requirement of the electronic industry is so stringent in specifications that indigenous industry is not able to meet the demand to the desired extent. Sometimes the requirement for the whole industry are so small that it is not economical to manufacture the same indigenously. Only in such cases imports of raw materials for the electronic component production are allowed on restricted basis. It can be said that the import content for the electronic component industry is of the order of 10 to 15 per cent, in general.

M/s. Bharat Electronics Limited, Bangalore is a public sector project engaged in the production of *transistors and diodes.* There are three more private units namely, M/s. Semi-conductors Limited, Poona, M/s. Continental Devices India Limited, Faridabad and M/s. Electronics & Computers (I) Ltd., Ghaziabad. The four units put together have an installed capacity of 35 million numbers. The estimated production in 1972 was more than the installed capacity at 38.2 million numbers. In fact, this industry has witnessed consistent progress in production which was 12 million numbers in 1967, nearly 15 million numbers in 1968, 17.4 million numbers in 1969, approximately 28 million numbers in 1970 and 35.6 million numbers in 1971.

M/s. Bharat Electronics Limited, Bangalore also manufactures *receiving valves.* Its installed capacity is of the order of 5 million numbers per year. The actual production in 1961 was 5.7 million numbers. It is expected that by 1973-74, total installed capacity for the valves is likely to increase to the levle of 10 million numbers.

Four manufacturing units in the private sector produced 67 million numbers of *carbon film resistors* in

1972. In fact, their production was more at 90 million numbers in the preceding year. The estimated demand for the resistors is 400 million numbers by 1973-74. The industry's present installed capacity is 80 million numbers.

Potentiometer is another important electronic component included in the core sector for development. Its installed capacity, spread over 7 private manufacturing units is 3.6 million numbers. Additional capacity of nearly 19 million numbers has been approved. The domestic demand for potentiometers by 1973-74 has been estimated at 16 million numbers while it is also targetted that the production will improve to the same level. Actual production in 1972 was of the order of 4.5 million numbers.

Loudspeakers industry in India has an installed capacity of nearly 2 million numbers a year. Their output in 1972 was 2.3 million numbers. The target of production by the end of the Fourth Five year Plan is 10.5 million numbers.

For *gang condensers*, the present installed capacity is 2.4 million numbers. Actual production in 1972 was nearly 2.2 million numbers and there are five manufacturing units engaged in the line.

While the estimated demand for *band change switches* by 1973-74 has been placed at 7 million numbers, the present installed capacity is 2.6 million numbers and the estimated output in 1972 was 2.8 million numbers. The total capacity likely to materialise by the end of the Fourth Plan is 4 million numbers.

Among *capacitors*, paper capacitors have an installed capacity of 6 million numbers per year while their actual production was of the order of 4.7 million numbers in 1972. The output of ceramic capacitors was estimated in the same period at 38.5 million numbers while their installed capacity currently is in the neighbourhood of 45 million numbers. Plastic film capacitors are produced by five units, of which one is in the public sector, and their production in 1972 was estimated at 23.9 million numbers whereas the installed capacity was 39 million numbers. The output of electrolytic capacitors was over 10 million numbers in 1972 as against the capacity already installed at 16 million numbers and a little over.

Ferrite rods and *cores* constitute another group in the electronic components sector. As compared to less than 100 tonnes in 1971 their production in the subsequent year was nearly 140 tonnes. The installed capacity of 150 tonnes is spread over two units.

ON STEEL PIPES AND TUBES

India is well up in its manufacturing capacity of steel pipes and tubes. The Industry has come to contribute growing amounts of foreign exchange through their exports. The production of various categories of pipes and tubes is included in the list of priority industries. Foreign collaboration is not considered normally necessary in the future plans for the industry's expansion.

The steel pipes and tubes industry mainly comprises three areas of production : black and galvanised tubes; E.R.W. tubes for bicycles and transformers and seamless steel tubes. The black and galvanised variety has an installed capacity of 977,460 tonnes per year. There are 14 units engaged in their manufacture. The estimated production in 1972 was 300,000 tonnes. Estimated demand for 1973-74 is 550,000 tonnes for welded tubes. Expansion proposals for the production of this variety are to attract liberal industrial licensing policy. Part requirements of zinc have to be imported for the production. Among other raw materials, H.R. steel skelp/strips in coils and one third of zinc requirements are available indigenously.

The black and galvanised sector has been exporting substantially and the export value in 1971-72 was of the order of Rs. 63.7 million. The industry had to face recessionary tendencies a few year back. The internal demand has again picked up. With the spur in the activity relating to agricultural and rural water supply as well as house building activity, the demand is expected to go up further. Some time back, acute shortage of steel skelp was faced by the industry and therefore the production could not increase despite the fact that enough capacity was available. But steps have since been taken to allow the import of skelp and production has started improving since 1971.

There are five units manufacturing E.R.W. tubes with an installed capacity of 53,400 tonnes. Actual production in 1972 was over 29,330 tonnes. This industry is also governed by liberal industrial licensing policy. As for the raw materials, cold rolled steel strips are allowed to be imported to the extent of 50 per cent of the total requirement. This industry has also been sparing surpluses for export, but the quantity that is available for the internal market has more or less remained constant. In view of the recession in the industry having receded, internal demand has improved.

Seamless steel tubes constitute the third major variety of steel pipes and tubes produced in India. A single unit, M/s. Indian Tube Company Limited, Calcutta is presently engaged in the production with an installed capacity of 39,600 tonnes. Actual production in 1972 was 36,640 tonnes against 36,060 tonnes in 1971, 29258 tonnes in 1970 and 24,430 tonnes in 1969. It has been decided by the Government of India that a plant should be set up in the public sector by the Hindustan Steels Limited for meeting the country's demand for the seamless steel tubes. The demand is estimated to go up by 100,000 tonnes by 1973-74. The import of the pipes manufactured indigenously is not allowed. The industry has also been active on export front. The major raw material, steel blooms, is available indigenously.

India's total exports of steel pipes, tubes and fittings was of the order of Rs. 108 million in 1971-72 as compared to Rs. 106.6 million in the preceding year. In the first three quarters of 1972-73 (April-December 1972), the export value stood at Rs. 90 million as compared to Rs. 78 million in the comparable period of the preceding financial year. During 1971-72 the break up of exports was as follows : cast iron tubes and pipes Rs. 11.88 million, seamless steel tubes and pipes Rs. 0.6 million; steel tubes and pipes except cast iron welded and clinched Rs. 65 million and cast iron and steel tubes, pipes and fittings Rs. 30 million.

In the cast iron tubes and pipes group, rain water pipes fetched Rs. 1.3 million and were mainly exported to Hong Kong, Singapore and U.S.A. Soil pipes secured Rs. 9.6 million and the major importers were Singapore, U.S.A., Hong Kong, Tanzania Republic and Kenya.

U.S.A. and Malaysia were the leading buyers of seamless tubes and pipes. In the group of tubes and pipes excepting cast iron and welded and clinched varieties, the galvanised category fetched Rs. 48.6 million, the leading buyers being Kenya, Burma, Iran, Indonesia, Kuwait, Jordan, Hong Kong, Australia, Abu Dhabi, Sudan and U.S.A. The non-galvanised category secured Rs. 16.5 million, mainly from Sudan, Iraq, Iran, Australia, and Jordan. Cast iron tubes and pipes were supplied principally to Tanzania Republic, Czechoslovakia, Bulgaria, Hungary, Sudan and Zambia. In addition, Sudan imported high pressure hydro-electric conduits of steel also.

MACHINE TOOLS IN PUBLIC SECTOR

Emergence of M/s. Hindustan Machine Tools on the industrial map of India in 1953, marked a beginning of an era of manufacture of sophisticated machine tools in India. Contributing to industrial growth during the span of two decades, HMT helped to develop a large number of industries of the country, both in the public and private sectors including aircraft manufacture, automobiles, ship-building, railways, electronics and telecommunications, petrochemicals, heavy electricals, light engineering, tractors, fertilisers and agricultural implements. With the technical collaboration of a Swiss firm HMT has developed itself into one of the world's largest single machine tool complexes having full fledged modern units in its infra-structure, located at Bangalore (Mysore State), Pinjore, (Haryana), Kalamassery (Kerala), Hyderabad (Andhra Pradesh) and Srinagar (Jammu and Kashmir).

HMT today offers a wide range of sophisticated machine tools that help build a large number of industrial items from massive ships to ordinary machines. It includes over 50 of the most modern machine tool designs developed in the advanced countries like U.S.A., U.K., Federal Republic of Germany France, Italy and Belgium. Besides, it developed 20 new machine tool designs of its own covering operations like turning, milling, drilling, grinding, boring, broaching, metal forming and multi-operation machines. In fact, one of the world's widest ranges of machine tools is produced by this single organisation. It has recently taken up manufacture of watches and diversified its range. During the years from 1953 to 1971, HMT's output exceeded Rs. 370 million mark.

In fact, its output which was of the order of Rs. 120 million during the years from 1953-1964, more than doubled to Rs. 250 million during the period from 1964 to 1971. This could be possible because of the establishment of additional six units and their growing volume of production from year to year. Notwithstanding the recession that overshadowed the growth of the country's entire engineering sector, particularly onwards 1966, HMT undertook expansion programmes. During 1971-72, its turnover rose remarkably to Rs. 290 million from Rs. 200 million in 1970-71. In 1971-72, besides machine tools and watches some new items were also manufactured by it.

The firm's future plans for diversification and expansion of its product range additionally include tractors, printing machines, heavy duty presses and press brakes, die casting and piston injection moulding machines and automatic date/day watches. Within the next few years, HMT is hopeful of stepping its turnover to over Rs. 600 million per annum.

On the export front too, HMT is not lagging behind. Currently its annual exports are around Rs. 10 million and with the completion of its expansion and diversification plans within the next few years, it is hopeful of stepping the exports up to the tune of Rs. 50 million per year. Currently, HMT accounts for about 33 per cent of the country's total exports of machine tools. HMT manufactured machine tools are sought by the markets world over. These even include the sophisticated ones such as Canada, U.S.S.R., Federal Republic of Germany, U.K., France, Australia, Switzerland, New Zealand, Netherlands, Sweden, Denmark, Ireland, Poland, German Democratic Republic, Hungary, Bulgaria and Czechoslovakia.

With a view to improve its exports, HMT has entered into collaboration agreements with an American and a British firm of repute in the line so that new designs of machine tools could be prepared jointly in India and marketed abroad by a world marketing organisation to be jointly set up by it and the American firm.

Besides physical exports, HMT started exporting technical know-how to other countries. Very recently, the Steel Corporation of Sri Lanka entered into technical collaboration agreement with HMT. Under the agreement, HMT assists its counterpart in Sri Lanka in the manufacture of machine tools. Besides, under a ten year technological collaboration agreement entered into with M/s. Wickman Ltd., a leading machine tool manufacturing company of U.K., HMT is to provide technical know-how for the manufacture of mini chuckers to the U.K. firm.

With an objective to keep itself abreast of trends in the production of sophisticated machine tools in the other countries and to compete with them in international markets in terms of quality and prices, HMT turns out more sophisticated machine tools, employing most modern technologies in the manufacture. HMT has to its credit the development of the latest expertise and technology in the field of engineering, particularly relating to industrial machinery. With command of these capabilities, HMT has vast scope to emerge as a major technical cosultancy organisation at home and abroad.

HMT's production in respect of machine tools including metal founding presses rose to an estimated Rs. 240 million in 1972-73 from Rs. 210 million in 1971-72, for wrist watches, it rose to Rs. 53 million from Rs. 46 million and for tractors to Rs. 80 million from Rs. 29 million.

RECORD COAL PRODUCTION

India's coal output during 1972-73 went up to an all time high level of 76.4 million tonnes registering an improvement of over 4 million tonnes over the production during the preceding year at 72.06 million tonnes. The coal production in West Bengal and Bihar improved during 1972-73 as compared to that in 1971-72. The output target for 1973-74 has been placed at 80 million tonnes. By the end of the Fifth Plan, the output is estimated at 143 million tonnes.

Of the total coal production in 1972-73, about 19.85 million tonnes were supplied to the power sector as compared to 16.02 million tonnes in 1971-72.

The Government of India has taken over the management of the non-coking coal mines, pending their nationalisation, under an Ordinance issued on January 30, 1973. The management of 738 non-coking coal mines, spread over 7 States has been taken over with the object of ensuring rational and coordinated development of coal production and promoting optimum utilisation of coal resources consistent with the growing requirements of the economy.

In October 1971, the Government took over management of 214 coking coal mines and coke oven plants, pending their nationalisation, in order to ensure scientific exploitation of coking coal mines and proper conservation of limited resources of coking coal. In the beginning of 1972, a public sector company, M/s. Bharat Coking Coal Limited was set up at Dhanbad (Bihar) for looking after the management of taken over coal mines and coke oven plants. Under the Coking Coal Mines (Nationalisation) Act 1972, these coal mines and coke oven plants were nationalised in May 1972.

ON INDUSTRIAL EXPLOSIVES

The industrial explosives sector is included in the list of priority industries in India.

The present annual installed capacity of the industry is placed at 47,000 tonnes. Actual production was of the order of 33,370 tonnes in 1972.

The current industrial policy, followed by the Government of India, favours granting of fresh licences. Foreign collaboration is permitted. Sodium nitrate and sulphur, the raw materials not available indigenously, are allowed to be imported through the State Trading Corporation of India. All other raw materials including ammonium nitrate, nitric acid, sulphuric acid, glycerine toluene, nitro cellulose and aluminium powder are available indigenously.

Besides meeting home demand the industry has, in recent years, entered the export market on a modest scale. During 1971-72, the exports of explosives amounted to Rs. 2.22 million as against Rs. 1.20 in 1970-71. Of the exports in 1971-72, fuses, primers and detonators brought in Rs. 1.68 million while propellent powders and other prepared explosives earned Rs. 0.04 million. Besides, gum powders, sparklers and other sorts were also the items of exports. Iran, Singapore Burma, U. K., Sri Lanka, Thailand, Dubai, Tanzania, Kenya, Nepal, Bahrein Islands, Kuwait and South Yemen People's Republic were the prominent importing countries.

DEBT SERVICING BURDEN ON DEVELOPING COUNTRIES

According to a recent IMF Survey, published by the International Monetary Fund, Washington, the debt service payments on the official and publicly guaranteed debt of 80 developing countries have been increasing nearly twice as fast as the export earnings with which the payments are mainly financed. At the same time, official development assistance has increased at a slower pace than the debt service payments. Already a substantial number of countries have been compelled to seek renegotiation of debt. These are the major findings of a study of the debt problems of developing countries prepared by the U.N. Conference on Trade and Development for the sixth session of the Commitee on Invisibles and Financing Related to Trade, scheduled to meet in Geneva during July 1973.

The total external public debt of the 80 developing countries for which the World Bank provides estimates rose from $ 21.6 billion in 1961 to nearly $ 67 billion in 1970. Preliminary estimates place the figure of 1971 at about $ 75 billion. The total external debt, public and private, of all developing countries (those that are not covered by the World Bank's reporting system inclusive) was probably close to $ 84 billion.

In 1970, 51.3 per cent of the debt of developing countries, as a group, was owned bilaterally to official entities, 20.4 per cent to multi-lateral institutions and 28.2 million per cent to private creditors. Developing countries with per capita incomes of $ 100 accounted for 16 per cent total external debt (1971), although they had only 8 per cent of the combined gross national product of the 80 developing countries. The bulk of the total debt-57.8 per cent was, however, owed by countries with per capita incomes between $ 100 and $ 500;

these countries generated 54.2 per cent of the total GNP. Quantumwise, the outstanding debt of developing countries at the end of 1970 was of the order of $ 66,698.5 million. Of this, the share of South Asia was $ 14,742 million, East Asia $ 9,195 million, Africa $ 10,694 million, Middle East $ 7,733 million, Southern Europe 6,963 million and Western Hemisphere $ 19,372 million.

The IMF Survey concludes that in the light of above developments, there is a general agreement that the size of the external debt of developing countries, its unfavourable maturity structure and the rapidly growing debt service payments are the questions requiring the attention of the international community.

SCENITIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PROGRESS IN MACHINE TOOL RESEARCH

The Research and Testing Department of the Central Machine Tools Institute, Bangalore, is engaged in the quantitative and qualitative evaluation of machine tool performance and development of devices for improving their accuracy. It has developed a large area of special instrumentation and devices hitherto imported. The Metrology Group of the Organisation, for instance, has developed surface roughness comparators for use on the shop floor. With these, the machine operator need not take the workpiece everytime to the inspection room for measuring surface roughness on a tallysurf. The Electrical Laboratory has developed a thyristor DC drive for machine tool feeds. The motor speed of this control unit can be from 100 to 3000 r.p.m.

The Research Department has also developed an electro-magnetic braking device for induction motors which incorporates an electronic circuit and is compact and free from wear and tear. The old brake was semi-mechanical system using a permanent magnet and was often subject to mechanical failure. Other successful innovations of this department are hydrostatic slideways for machine tools, excitors for dynamic response tests, dynamometers, new type of hydrodynamic bearing for grinding spindle units, vibration analyser, proximity switch and hydraulic elements such as gear pumps, relief valves and pressure switches.

The cutting tool section of CMTI has developed some useful designs in the field of cutting tools, with throw away tips. The Institute provides other services to the domestic industry including training courses in machine tools, design and product technology. Some of the prestigious machine tools designed by the Institute are horizontal boring machine, with a 63 mm diameter of boring spindle; verticle broaching machine 3 tonne capacity; flow turning lathe with a centre height of 450 mm; hydraulic copy attachments for lathes and milling machines; universal cylindrical grinding machines for jobs of maximum diamter of 160 mm and maximum length of 400 mm and Centreless grinder for maximum job diametre of 63 mm and maxium job width for plunge grinding of 200 mm.

NEW STRAINS IN BRINJAL DEVELOPED

The Institute of Horticultural Research of the Indian Council of Agricultural Research near Bangalore has recently developed an improved green brinjal variety (IHR 193-1). The Haryana Agricultural Univarsity, Hissar has also developed a new strain, namely, a purple long and fleshy type H-4.

Nutrition experts have commented that contrary to the common belief, brinjal is fairly high in nutritive value. It has a balanced proportion of quite a few essential minerals and vitamins. In 100 grams of the edible portion of brinjal, the protein content is of the order of 1.4 grams, 0.3 grams of fat, 0.3 grams of minerals and 4 grams of carbohydrates. The energy value of the vegetable is 24 calories. It is fairly rich in phosphorus with 47 mg. in 100 grams. It also contains 18 mg. of calcium, 0.9 mg. of iron, 0.11 mg. of riboflavin and 12 mg. of vitamin C. Carotene, thiamine and niacin are also present in smaller quantities.

COTTON LEAVES FOR CITRIC ACID

A team of researchers at the Indian Agricultural Research Institute have recently concluded that cotton leaves can be used as an economic source for the production of citric acid saving thereby substantial amounts of foreign exchange to the country every year.

India continues to import large requirements of citric acid. In the first three quarters of 1972-73, the import bill was about Rs. 6.30 million.

The IARI examined leaves of various varieties of cotton grown in different regions in India and concluded that the Southern varieties are richer in citric acid content than the others. Another important organic acid, namely, malic acid can also be obtained from cotton leaves as a byproduct.

The traditional source of citric acid is from the citrus fruits which are uneconomical industrially.

INDIGENOUS KNOW-HOW FOR ABS PLASTICS

Indian researchers have developed indigenous technology for manufacture of ABS plastics which has wide application in Defence and Industry.

The technology developed at Shri Ram Institute of Industrial Research, New Delhi is reported to be ready for licensing to industries through National Research and Development Corporation (NRDC). The research project was sponsored by the Council of Scientific and Industrial Research and NRDC.

The technology developed by the New Delhi Institute is significant as the country's present requirements of ABS plastics is met through imports. Described as a step towards self-reliance in plastics and an endeavour in import substitution, the technology when put to commercial use is expected to help save foreign exchange worth Rs. 10 million at the present rate of import of 1000 tonnes a year.

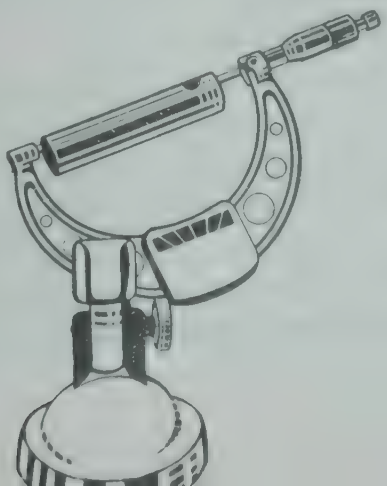
PREPARATIVE ATTACHMENT FOR GAS CHROMATOGRAPHS

The Regional Research Laboratory (RRL) Jorhat, has developed a gadget which can be attached to any gas-chromatograph to convert it into a "Preparative Gas Chromatograph". This increases the versatility of gas-chromatograph making it more sophisticated.

A gas chromatograph having preparative attachment is suitable to collect the closely related compounds from a complex mixture. Pure components thus collected from column effluent can be subjected to ancillary techniques of gas chromatography for chemical identification which makes gas chromatograph more applicable to research and industry.

In the present design developed by RRL, provision for collection of four different components has been kept but with slight modification eight different components can be collected in a single run. The preparative attachment is completely automatic and once programmed, needs no attention of the operator, for running it, though manual operation is also provided. Suitable electronic circuits make it possible for the unit to collect any part of the sample. The process consists of a universal attachment which can be incorporated with any gas chromatograph to convert it into a preparative model. It is estimated that at least 500 pieces would be needed every year. At present, these attachments are being imported.

The attachment developed has been tested with a laboratory gas chromatograph and has given a very accurate and consistent performance both for manual and automatic operation. The versatile performance of the attachment can be demonstrated to interested parties by the RRL.



COMPOSITION OF INDIA'S IMPORT TRADE

(Rs. in million)

Commodity	1972-73	1971-72	1971-72
	(April to December)		
Dairy products and eggs	**163.00**	**121.05**	**208.13**
Milk and cream	134.10	107.90	189.90
Cereals and cereal preparations	**216.70**	**1048 35**	**1312.05**
a) Wheat	34.25	847.40	1026.04
b) Rice	103.20	142.20	180.75
Fruits and vegetables	**367.80**	**278 90**	**378.42**
a) Cashew nut (craw)	229.25	137.50	279.05
b) Dried Fruits	66.15	42.10	57.80
Pulp and waste paper	**82.60**	**66.15**	**95.75**
Textile fibres and waste	**948.30**	**1063.45**	**1382.33**
a) Wool and other animal hair	96.15	112.70	142.35
b) Cotton	763.30	869.25	1133.90
Crude fertiliser and crude minerals	**259.15**	**261.25**	**364.00**
Petroleum and products	**1493.00**	**1430.15**	**1941.40**
a) Petroleum, crude and partly refined	1063.55	1102.35	1474.75
b) Petroleum products	429.50	327.80	466.65
Fixed vegetable oils and fats	**103.90**	**183.35**	**281.70**
Chemicals	**1558.70**	**1613.95**	**2176.75**
a) Chemical elements and compounds	591.85	573.60	718 40
b) Medicinal and pharmaceutical products	168.05	216.70	265.57
c) Manufactured fertilisers	474.20	518.30	812.00
Paper, paper board and manufactures	**184.30**	**236.40**	**348 87**
Pearls, precious and semi-precious stones	**300 15**	**194.55**	**263 34**
Iron and Steel	**1568.80**	**1787.55**	**2375.70**
a) Ingots and other primary forms	75.95	114.00	126.92
b) Iron and steel bars, rods, angles, shapes and sections	220.95	278.95	347.06
c) Universals, plates and sheets	988.60	1017.65	1423.70
d) Tubes, pipes and fittings	140.90	134.30	173.10
Non ferrous metals	**766.50**	**827.85**	**1017.65**
a) Copper	368.20	407 15	511.80
b) Nickel	56.65	56 40	63.60
c) Aluminium	23 30	85.10	93 23
d) Lead	75.20	60 25	76 28
e) Zinc	163.55	134.50	177.30
Machinery other than electric	**2096.50**	**2106.70**	**2680.00**
a) Power generating machinery	265.70	207.15	292.00
b) Agricultural machinery and implements	159.60	213.90	256.00
c) Metal working machinery	227 20	184.70	240 00
d) Machines for special industries	233.30	237.70	295.50
Electrical machinery, aparatus and apliances	**850.60**	**720.10**	**1018.60**
a) Electrical power machinery and switchgear	340.90	270 45	376.00
Transport Equipment	**546.10**	**659.75**	**844.00**
a) Railway vehicles	135 40	172.85	199.40
b) Road motor vehicles	205.05	268.35	357.25
c) Aircrafts	180.70	196.90	265.53
Total including other items	**12390.15**	**13635.95**	**18120.17**

Source : Department of Commercial Intelligence and Statistics, Calcutta.

FOCUS ON FARM MACHINERY EQUIPMENT

Agriculture being the mainstay of Indian economy, emphasis on the growth and diversification of the farm machinery industry is understandable in the context of the country's economic planning. The major sectors of development are tractors, agricultural discs, combined harvestors, diesel engines, power driven pumps and power tillers.

The agricultural *tractors* industry is considered as a core sector for development. A total of 17 manufacturing units, one in the public sector and the rest in the private industry, is active in the field. While the licensed/registered capacity for tractor production is of the order of 147,000 numbers per year, the capacity installed so far is of the order of 56,000 numbers. It is hoped that by 1973-74 the installed capacity will increase to 60,000 numbers per annum. The estimated demand by that year has been placed at 90,000 numbers.

Wayback in 1967, tractor production was nearly 10,530 numbers. In 1972, it grew to 18,300 numbers. In fact, the highest output recorded was in 1970 at 19,300 numbers. The Government of India follows a liberal industrial licensing policy for fresh proposals of capacity expansion for tractors. In view of the importance of this product for agricultural promotion in the country and the various developments that are taking place elsewhere in the world as also in its manufacturing sophistication, foreign collaboration is permitted in this line of production. Among the raw materials required for tractor manufacture, pig iron, non-ferrous metals, and steel forgings and castings are available indigenously in substantial quantities but items like CRCA sheets, bright/black round bars, bright/black flats, bright strips and plates and seamless steel tubes of certain sizes are having to be imported presently. As domestic production does not yet fully meet indigenous demand, tractors continue to be imported.

There are six units engaged in the production of *agricultural discs* with an installed capacity of 500,000 numbers. Actual production in 1971 was nearly 115,000 numbers. The output, however, reduced to 51440 numbers in the subsequent year. As in the case of tractors, the agricultural discs industry is open for further industrial licensing and foreign collaboration is also permitted on merits. The major raw material for the production in the line is high carbon steel sheet/plate having carbon content above 0.65 per cent. Import substitution in the discs industry is, therefore, possible only if this variety of steel is produced indigenously. The import of this variety of steel has been canalised. Under the current import policy, import of specified sizes of plain discs is banned.

A single manufacturer M/s. Vicon Ltd., 21, Ulssor Road, Bangalore, with collaboration from Netherlands is currently producing a limited quantity of *combined harvestors*. The firm has an installed capacity of 500 numbers per year and its actual production in 1972 was about 240 numbers. The estimated demand for the harvestors by 1973-74 is 2500 numbers. The production targetted by that period is 600 numbers. Further plans for expansion in this industry are also open for licensing. Foreign collaboration in the line is permitted although import of the material is not allowed. Nearly 75 per cent of the material-mix for the production emerges from indigenous sources. The indigenously available raw materials include alloy and constructional steel and steel/malleable iron/cast iron and castings. CRCA sheets and plates (above 5 mm) are being imported.

The *diesel engines* industry is another important line of promotion included in the priority sector of development. This industry has an installed capacity of 192,000 numbers. Spread over 27 manufacturing units of which one is in the public sector, actual production of the manufacturing units borne on the registers of the Directorate General of Technical Development, Ministry of Industrial Development was about 80,000 numbers in 1972. There is a good distance still to be covered by the industry in terms of meeting indigenous demand which by 1973-74 is estimated to increase to the level of 330,000 numbers per year. By that year, the total capacity likely to materialise has been placed at 257,000 numbers. This industry too is open for industrial licensing and foreign collaboration is to be considered on merits. The industry presents a typical picture of progress in import substitution. Almost 100 per cent import substitution has been effected in the case of vertical engines below 15 HP and horizontal engines below 50 HP. For other types of engines excluding those for ocean going vessels, 90 to 95 per cent of the raw materials are available indigenously. About 90 per cent of the production of diesel

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engines is in the small HP (below 15 HP) range. A sizeable production of small HP diesel engines emerges from the small scale sector. Among the raw materials that are still to be imported are crank-shaft forgings for multicylinder engines, seamless tubes and turbochargers. For engines of 150 to 350 HP, pistons and rings, governors, cylinder head forgings and cylinder block castings are imported. As per the import policy, only diesel engines and marine diesel engines above 400 HP are allowed to be imported on merits of individual cases.

Power driven pumps constitute another area of priority development in the farm machinery sector. The installed capacity spread over a public sector project and 40 private manufacturing units is of the order of 460,280 numbers. Actual output in 1972 was 78,000 numbers. It is estimated that domestic demand for the pumps will be in the neighbourhood of 535,000 numbers by 1973-74. The production target by the end of the Fourth Plan has been placed at 450,000 numbers. Almost 100 per cent import substitution has been effected in the pumps industry also. But for the import of stainless steel shaftings, other raw materials including pig iron, non-ferrous metals and M. S. shaftings, are available indigenously. The industry is open for industrial licensing and proposals for expansion are considered on merits.

The licensed/registered capacity for *power tillers* which is included in the core sector of development is 41,000 numbers. There are six units for the manufacture of this product, one of which is in the public sector. The installed capacity is 10,000 numbers per year. Actual output, however, has not yet picked up substantially and it was only 220 numbers in 1972. One of the units which has been in production since 1965 has achieved an indigenous content of about 90 per cent. For the new units which are yet to go into full production indigenous content is around 65 per cent. The low production of the industry is due to insufficient offtake. This industry is also open for further licensing and foreign collaboration is to be permitted on merits. ☐

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HINDUSTAN STEEL'S EXPORT EFFORT

India's iron and steel industry has contributed Rs. 408 million to the country's export trade during 1971-72. Iron and steel bars, rods, angles, strips and sections constituted the prime group of export earning, having secured Rs. 108 million. Soviet Union, Sudan, Iran, Nepal, U.S.A., Arab Republic of Egypt, Poland, Canada and Singapore were the prominent destinations for these items. Tubes, pipes and fittings were the next important line of export and they also fetched almost Rs. 108 million in the year. The principal importers were Zambia, Tanzania, Burma, Czechoslovakia, Sudan and U.S.A. The third best category of exports related to pig iron, sponge iron and ferro alloys which contributed Rs. 97 million with Japan, U.S.A., Yugoslavia, Rumania and Arab Republic of Egypt as the major buyers. Rails and railway tract construction materials form yet another category of export dynamism.

A single exporter M/s. Hindustan Steel Limited is India's largest supplier of pig iron and finished steel and exclusive manufacturer of products like hot and cold rolled coils, CR sheets, cold rolled galvanised sheets, cold rolled electrolytic tin plates, large diameter ERW pipes, stainless steel sheets, alloy steel products and sleepers.

From a level of Rs. 1.4 million wayback in 1964-65, the export effort of M/s. Hindustan Steel Limited rose to the peak of Rs. 53 million in 1970-71 – a forty fold increase and 83 per cent improvement quantity-wise and 79 per cent, value-wise. In the subsequent year there has been a drastic cut in ceilings / targets of iron and steel materials in view of the upsurge in home demand. The company's exports amounted to Rs. 290 million in 1971-72 and Rs. 174 million during 1972-73.

So far, HSL has exported its wares to over 40 countries on the six continents of the world including the industrially advanced economies like the U.K., U.S.A., U.S.S.R. and Japan. These exports include some of the most sophisticated products like large diameter ERW pipes and rails, ingots, billets, rods in coils, bars, structurals, galvanised corrugated sheets and pig iron.

India's largest industrial complex and a source of direct employment for over 100,000 persons, HSL comprises three giant steel plants at Rourkela, Bhilai and Durgapur, a fertilizer plant at Rourkela, an alloy steel plant at Durgapur (one of the biggest in Asia), sophisticated by-product units for the recovery of coal chemicals, four big coal washeries and a string of modern mines and quarries and a countrywide network of sales offices and stockyards. HSL serves a wide group of end-users-railways, foundries, re-rollers, fabricators, tube makers, defence and other engineering industries.

The company has entered the field of exports even from the initial stage when its plants first went on stream for the production of pig iron and semis (1959). That was a time when the entire quantity of pig iron and semis produced by HSL could not be consumed within the country and export of a large portion of production became necessary. With the commissioning of rolling mills and increased consumption within the country, the export of pig iron and semis declined gradually and for a time they were not available for export at all. However, with increased production and insufficient home demand, even finished products, became available for export subsequently. While the export range of HSL in 1960-61 consisted of pig iron, ingots and billets, the overseas supply in 1970 71 was broadened to cover not only these products but bars, beams, channels, angles and rails.

Hindustan Steel Limited has won for the second time a national award for outstanding performance in the field of exports for the year 1968-69 and the export value crossed the million tonne mark valued at Rs. 400 million nearly 60 per cent of the total exports of iron and steel materials from India during that year.

During 1972-73, HSL's share in the total exports of iron and steel reached an all time record of about 95 per cent in terms of quantity and about 90 per cent in terms of value. In the year, India's total exports of iron and steel stood at 472,400 tonnes at a value of Rs. 195 million. HSL's share was 448,800 tonnes at Rs. 175 million.

A brief study of HSL's exports-productwise and countrywise-would indicate that during 1972-73 it exported 401,400 tonnes of pig iron at a value of Rs. 130.4 million mainly to U.S.S.R. (185,800 tonnes at Rs. 59.6 million), Japan (169,500 tonnes at Rs. 54.5 million), Singapore, Yugoslavia, Philippines and Taiwan. It also exported structurals worth Rs. 37.6 million (39,900 tonnes) to the Soviet Union, 4,400 tonnes of rails at Rs. 3.2 million to Arab Republic of Egypt and 2,900 tonnes worth Rs. 3.6 million of G. C. sheets to Bangladesh. In the earlier year 1971-72, the leading markets for HSL's pig iron were Japan, Yugoslavia and Singapore while structurals were mostly absorbed by the Soviet Union. The company exported rails to South Korea at a value of Rs. 43 million in that year.

Among HSL's pioneering efforts, the most important has been the successful development of markets abroad for a sophisticated product like rails. Against stiff competition from well entrenched competitors from advanced countries, HSL clinched orders for rails in markets like Sudan, Iran, Turkey, New Zealand, Malaysia, Ghana, Arab Republic of Egypt, South Korea and Argentina. From several of these countries, repeat orders also were obtained. Securing the orders was stiff enough but the execution was a real challenge. Overseas demand being by and large for long length rails of 18 to 29 metres, new problems arose in trans-

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porting and shipping rails. Happily, they have been solved and to date HSL has exported over 360,000 tonnes of rails.

For the export of bars and structurals, HSL's efforts have been equally significant. Till the end of 1972, over 842,000 tonnes of medium and heavy structurals have been exported to U.S.S.R., and 40,000 tonnes of bars and structurals have been exported to the U.S.A. INP joists were specially developed to meet the needs of the Iranian market and a total quantity of over 17,000 tonnes has been exported thereto. Against stiff competition from suppliers in U.S.A., over 30,000 tonnes of wire rods from the new mill in Bhilai have also been exported, bulk of it to U.S.A.

Another important break-through achieved by HSL was in respect of ERW pipes; about 14,000 tonnes of these pipes were supplied to New Zealand and 4,000 tonnes to Kuwait.

During April 1966 and December 1972, HSL exported over 207 million tonnes of pig iron. The company has emerged as one of the largest pig iron exporting organisations in the world. During 1968-69 it achieved a record export of 591,000 tonnes. Since 1971, however, world markets for pig iron have been deteriorating as a result of cutback in steel production in Japan and U.S.A. HSL has, therefore, pursued a vigorous policy of market diversification. New markets have since been captured including Singapore, Taiwan, North Korea, Arab Republic of Egypt and Yugoslavia. In early 1972-73, the largest ever export order concluded by any purchaser/exporter was booked by Hindustan Steel Limited from the Soviet Union. The order was fetched for the supply of 500,000 tonnes of pig iron. The delivery of materials in terms of this contract is to be completed by November 1973.

The successful execution of an order of 50,000 tonnes of steel ingots for supply to the largest steel company in Japan is yet another feather in HSL's cap. The company is proud that the materials could be supplied to the entire satisfaction of the engineers of the Japanese mills who personally inspected the product at HSL's plant at Durgapur.

HSL has also successfully exported 200,000 tonnes of billets to Iran, Korea and Sri Lanka.

A contract for the export of 3,500 tonnes of galvanised corrugated sheets was also concluded recently from Bangladesh. In fact, this was the first contract ever concluded for export of galvanized corrugated sheets from India.

In the field of steel exports from India, HSL is one of the major organisations that has offered deferred payments facility by way of long term credit up to six years. Orders booked under this facility covered a quantity of more than 275,000 tonnes of steel.

In fulfilling the major export contracts, HSL has developed new profiles in many instances both for rails as well as for other sections to cater the specific requirements of the buyers.

Besides being a top category exporter, HSL has also been entrusted with the task of importing steel items for supply to engineering fabricators engaged in exports as also to feed the small scale industries and for barrel manufacturers and tin container producers.

HSL has been appointed by the Government of India as a canalising agency for the import of mild steel, high carbon and alloy steels (excluding stainless steel), wire rods in coils, prime MS/BP/HR/CR sheets in cut lengths for the manufacture of drums, barrels and steel furniture, MS cold rolled/hot rolled strips, sheets, skelp in coils and tinplates for manufacture of open top sanitary cans. In addition, HSL is also importing to meet the requirement of many Government Departments and Undertakings. The total value of steel imports made by Hindustan Steel during 1972-73 amounted to about Rs. 880 million as against Rs. 565 million in 1971-72 and Rs. 157 million in 1970-71.

EXPORT ORDER FOR CIRCUIT BREAKERS

Export orders worth Rs. 1 million have been recently secured by M/s. Bharat Heavy Electricals (BHEL), Hyderabad for the supply of minimum oil circuit breakers to Iraq and Cambodia. These orders have been secured through the Indian Consortium of Power Projects as a part of a turnkey job. BHEL has undertaken to supply one 132 kv and three 33 kv minimum oil circuit breakers to the National Electricity Department of Iraq and nine 132 kv minimum oil circuit breakers to Phnom Penh High Voltage Transmission Project, Cambodia.

Earlier, BHEL executed an order from Malawi for a 66 kv breaker. Five 132 kV breakers for Kenya have also been tested and are ready for despatch.

India's export trade in apparatus for electrical circuits amounted to Rs. 47.50 million during 1971-72 and Rs. 41 25 million in the first three quarters of 1972-73. Oil circuit breakers for use above 660 V were mainly imported by Burma and Australia during 1971-72. German Federal Republic and Kenya were the principal customers for motor starters for A. C. motors of 660 V and below. Malaysia and Philippines were the leading buyers of motor control gears and motor starters of D. C. variety. Kuwait was the most important market in 1971-72 for its import of switch fuse units above 15 amp. German Federal Republic proved to be the significant importer of relays while Malaysia and Kuwait were the important customers for switchgears and control panels. Switch control and switchgears, insulated electric resistance wires, holders and other material and accessories of switchgears were among the other varieties of products exported.

For the production of switchboards and LT/HT circuit breakers, there are twentythree units presently active in India. Two of them, namely, M/s. Bharat Heavy Electricals, Hyderabad and M/s. Heavy Electricals Limited, Bhopal are in the public sector. The installed capacity is for 55,740 numbers per year and actual output was 26,665 numbers in 1972. Both industrial licensing and foreign collaboration proposals are to be considered by the Government of India on merits of individual proposals. Except for special uses, these products are not allowed to be imported but some of the raw materials are required to be imported from foreign sources such as bimetal strips, special moulding powder, electrolytic copper and alloy copper strips. Raw materials available indigenously are copper strips, steel sheets, M. S. plates as well as castings.

TEXTILE MACHINERY TO SOUTH KOREA

Indian industry's capacity to manufacture and export textile machinery is an established fact by now. During 1971-72, the textile machinery exports totalled nearly Rs. 49 million. Cotton spinning and drawing frames, ring frames, knitting machines, die machinery and a host of accessories of textile machinery are active on export front. Arab Republic of Egypt, Iran, Kenya, German Democratic Republic and Malaysia are among the principal importers.

The Projects and Equipment Corporation, New Delhi, a subsidiary of the State Trading Corporation of India, has recently bagged an order for the supply of textile machinery to South Korea worth Rs. 40 million under an agreement signed with that country. Supplies are to commence from October this year and are likely to be completed by April 1974.

The Indian Corporation expected to receive repeat orders from the same country for the expansion and modernisation of its textile mills.

PEC's export effort during 1972-73 totalled Rs. 170 million. It is expected that the Corporation will treble its exports to the level of about Rs. 350 million during 1973-74. Exports of wagons to Yugoslavia, Iran and Poland are to account for nearly Rs. 155 million. Aside from wagons, the major items of export organised by the Corporation include bicycles to the U. S. and Canadian markets, handtools to France and carriage equipment including petrol dispensing equipment and automobile ancillaries to the Soviet Union.

India's total installed capacity for the production of textile machinery is worth Rs. 450 million every year. The value of output was of the order of Rs. 350 million in 1971. In the broad range of textile machinery that is manufactured in the country are included the full needs of the preparatory and spinning departments and textiles from blow room lines to carding engines and from high speed draw frames, fly frames and ring frames to doublers. The industry has also taken up programme for production of several new lines such as fully automatic single spindle pirn winding machines, fully automatic warp winding machines and automatic knitting machines.

India has undertaken turnkey projects for several textile units abroad. The project undertaken in Libya for a weaving and processing mill at a value of Rs. 160 million is an example.

INDIAN TRANSFORMERS COMMISSIONED IN MALAWI

Three power transformers, one of 20,000 Kva and two of 11,500 kva that were supplied to Malawi (East Africa) on a turnkey basis by M/s. Heavy Electricals (India) Ltd. have been commissioned. The transformers were designed, built and erected by the Indian firm in Bhopal.

This is the first time that transformers of such large ratings built in India have been put into service in that country. The equipment is erected at Tedzani and Blantyre power stations of the Malawi Electricity Supply Commission.

The order was procured by M/s. HEIL against stiff international competition and after evaluation of the offer by the British consultants for the Electricity Supply Commission of Malawi.

The Indian industry has accomplished notable progress in the heavy electrical equipment sector. The two major public sector projects in the country M/s. Heavy Electricals India Limited, Bhopal and M/s. Bharat Heavy Electricals Limited with units at Hardwar, Hyderabad and Tiruchirapali turned out a wide variety of heavy electrical equipment. The Bhopal project produces power transformers, hydro and thermal generators and large industrial motors, high tension switchgears, power rectifiers and power capacitors.

India-manufactured transformers are in widespread demand abroad. During 1971-72, transformers in a variety of specifications were supplied to overseas markets to fetch Rs. 16.55 million as against the export value of Rs. 9.30 million in 1970-71. During the first nine months of 1972-73 (April-December 1972) the exports amounted to Rs. 11.55 million. Additionally, parts and accessories netted Rs. 4.55 million.

The export range includes transformers upto 37.5 KV (rating upto 3000 KVA), 37.5 KV (rating upto 5,000 KVA), transformers above 37.5 KV (rating upto 10,000 KVA), transformers upto 37.5 KV (rating above 5,000 to 10,000 KVA), transformers 3.75 to 60 KV (rating upto 3,000 KVA) and transformers above 66 to 132 KV (rating above 10,000 KVA).

In the organised sector, installed capacity for the production of transformers is in the range of 9.26 million KVA. Production in 1972 was estimated at 10.8 million KVA. In all, there were 29 units manufacturing transformers in India.

SURGICAL INSTRUMENTS ON EXPORT STREAM

India offers a broad range of instruments to world markets. The export range includes instruments in scientific, medical and optical fields and a large number of measuring and controlling instruments and equipment. India's exports in the line amounted to Rs. 16.50 million in 1971-72. Of these, medical instruments alone netted Rs. 6.62 million. Additionally, electric apparatus for medical purposes secured Rs. 0.87 million. During the first nine months of the following year, the exports were of the order of Rs. 12.18 million. Of this, the share of medical instruments was worth Rs. 6.40 million. Additionally, electric apparatus for medical purposes brought in Rs. 0.5 million. Among the leading buyers of these instruments, U.S.S.R., U.S.A., U.K., Nepal, Iraq, Sudan, Vietnam, Spain, Canada, Philippines, Arab Republic of Egypt and Yugoslavia are prominent.

M/s. Indian Drugs and Pharmaceuticals Ltd. (IDPL), Madras, a public sector undertaking engaged in the manufacture of a wide variety of instruments required for medical and surgical purposes exported surgical instruments, finished and semi-processed and allied items such as pliers, handles, scissors and garden hand tools during 1971-72 to fetch Rs. 4.61 million. The firm did not export in the preceding year (1970-71) but has brought in sizeable amount of foreign exchange in the following year.

IDPL has three plants located at different places in the country. Of these, the Antibiotic plant is located at Rishikesh in Uttar Pradesh, Synthetic drugs plant at Hyderabad, Andhra Pradesh, and Surgical instruments plant at Madras.

The Madras plant is currently engaged in the manufacture of special instruments for family planning in addition to its normal range of instruments.

India's export range in medical and surgical instruments broadly covers surgical forceps and clips, surgical knives and scissors, anaesthetic equipment, surgical suture needles, medical, dental and surgical instruments and electromedical equipment.

Medical and surgical instruments industry in the organised sector has an installed capacity of Rs. 37.5 million worth of medical and surgical instruments and Rs. 38 million for X-ray and electromedical equipment. The nine units engaged in the manufacture of medical and surgical instruments produced worth Rs. 20.1 million during 1972 while 6 units turned out X-ray and electromedical equipment amounting to over Rs. 30 million during the same year.

CONSUMER GOODS TO WORLD MARKETS

The test for a company's export competence is to introduce those very products that have been made for the internal market in the highly competitive world markets. The test becomes typical if the export product in question is a consumer goods variety. M/s. Hindustan Lever Limited, 165/166 Backbay Reclamation, Bombay, have increased their annual export performance at a compound rate of about 70 per cent per annum since 1968. From Rs. 10.8 million in that year, their export trade grew to the level of Rs. 88.20 million in 1972. The exports have grown not only in volume and in value but also in the range of goods and markets.

The company's export house, M/s. Indexport has built a significant level of exports to the U.S.S.R., particularly of synthetic detergents in consumer packs. India's total exports of synthetic detergents to U.S.S.R. have been going up. They were valued at Rs. 8.35 million during 1971-72 of which the offtake to U.S.S.R. was as much as Rs. 7.25 million. In the first three quarters of 1972-73, the country's total exports of the detergents was Rs. 5.8 million and U.S.S.R. absorbed as much as Rs. 5.5 million. The share of the Bombay firm in these exports to USSR is substantial.

The company has spread its manufacturing net wide enough to cover several consumer products. They are vitally involved in the task of increasing the supply of oil seeds, vegetable proteins and other foods. Of the oil seeds, they have pioneered the collection and processing of forest seeds and applied their research and development know-how for producing good quality soaps. About 40 per cent of the oils now used in making the company's soaps were virtually unknown ten years ago. India's import bill of soap making oils could have been much heavier without oils such as sal, neem and kusum. They have encouraged the production of essential oils in the tea gardens of Assam and now India is moving fast along the road to self-sufficiency in citronella oil. The potential of these oils, particularly in the export market has just begun to be tapped.

By developing processing techniques in the company's own research laboratories, the feed value of oil cakes has been improved. These new cakes are not only being increasingly used within the country but can also be exported to world markets looking for new sources of vegetable proteins. A major benefit from this activity is that larger quantities of oil cakes like groundnut extraction have been released for export from India.

It is in the consumer goods sector, however, that Hindustan Lever Limited has mainly improved its contribution. Its effort to replace soaps by synthetic detergents is a standing example. The company's contribution in the detergents field becomes evident in the context of import substitution. Each tonne of synthetic detergent produced saves more than one tonne of imported tallow. Synthetic detergents will be wholly indigenous when the public sector detergents alkylate plant goes on stream and local phosphate manufacture expands.

On the chemical side, the company now makes indigenously many of the fine chemicals that were used to be imported till recently. A wide range of aromatic chemicals are now in regular manufacture. They are now capable of making practically all the nickel catalysts that India needs for hydrogenation of oil. In basic chemicals also they have plans to manufacture caustic soda and industrial phosphates, both of which are currently in short supply in India.

The company's total saving in imports as a result of indigenous production of chemicals, synthetic detergents was about Rs. 269 million. This is in addition to the use of non-traditional soap making oils which also save the import of tallow.

The company has recently participated in an Exhibition organised by their principals, M/s. Unilever in Moscow. India was the only country outside the Western Europe to be included in the exhibition. The company's participation proved successful and is likely to pave way for newer export successes. The company by its exports and reduction in imports has over the last five years made a net contribution of Rs. 400 million towards improving India's balance of payments position.

EXPORT SUCCESS OF A BOMBAY FIRM

Raising its export value to Rs. 12 million during 1971-72, M/s. Larsen & Toubro, Dougall Road, Ballard Estate, Bombay, has nearly doubled its preceding year's export record. The firm's major export orders include the one for the supply of petrol pumps and allied equipment to the Soviet Union bagged against stiff competition from British, Dutch and Japanese suppliers, sugar diffusers to Malaysia and the recent export orders received for crown corks and garage equipment.

The range of the firm's manufacture includes switchgears, chemical plants, and cement machinery. Although during the initial stages, the firm relied on imported know-how from its collaborating firms abroad, it has progressively developed its own know-how and engineering expertise. Besides building competence in respect of production and exports, the firm is currently engaged in rendering engineering services for irrigation and power projects, steel plants, cement, paper and pulp factories and for the manufacture of capital equipment for agro-based industries.

The research and development activities of the firm enabled it to add quite a few new lines of manufacture. In the field of switchgear for instance, new ranges have been added, which have been entirely designed and developed with the firm's own engineering expertise.

The Bombay firm has to its credit the manufacure of sophisticated steam generating units, towers for heavy water plants and dairy equipment. It has also set up a plant for unloading fertilisers in bulk from ships and beer making plants.

EXPORT PERFORMANCE AND POTENTIAL

HIGH FOREIGN DEMAND FOR INDIAN CASTOR OIL

Castor oil exports from India are on an unprecedented uptrend. While during the entire year of 1971-72, the exports fetched only Rs. 61.8 million, they touched a new peak of Rs. 138 million even during the first three quarters of 1972-73.

Interestingly, castor oil export has exceeded the foreign exchange earning of popular engineering items of India like electric wires and cables and bicycles and parts. The export value of these products was estimated at Rs. 126 million and Rs. 103 million respectively for the entire year of 1972-73.

The principal customers of Indian castor oil were U.S.S.R., U.K., U.S.A., Czechoslovakia, France and Japan in that order in the first three quarters of 1972-73. The Soviet Union imported 8.9 million kg. of the oil at a cost of Rs. 41.33 million in the period. The import values of U.K. (7.85 million kg.), U.S.A. (5.9 million kg.) were Rs. 27 million and Rs. 25 million respectively. The value of Czech purchases was Rs. 1.40 million (3.6 million kg.) while that of France and Japan was Rs. 1.27 million (2.3 million kg.) and Rs. 1.17 million (2.7 million kg.) respectively. Australia and Netherlands were the other important buyers. During 1971-72, the major importer was U.S.S.R. at Rs. 55.4 million (15.8 million kg). Czech imports were valued at Rs. 3.9 million (1.34 million kg.).

The unit value position of castor oil exports can be visualised from the fact that in 1971-72 the quantum exported was 17.9 million kg. at Rs. 61.8 million and in the first three quarters of 1972-73, it was 32.8 million kg. at Rs. 138 million.

Bangladesh has emerged as a fresh market. While the market imported nil in 1971-72, it purchased 377,000 kg. worth Rs. 1.10 million in the first three quarters of 1972-73.

The total export effort of fixed vegetable oils secured Rs. 149.22 million in the first three quarters of 1972-73. During the entire year of 1971-72, it was nearly of the order of Rs. 71.4 million.

Aside from castor oil, India exports substantial quantities of groundnut oil, mustard oil, coconut oil and cashew shell oil. The comparative export picture of these oils in 1971-72 and in the first three quarters of 1972-73 was as follows : groundnut oil Rs. 329,530 and Rs. 280445; mustard oil Rs. 2.33 million and Rs. 3.90 million; coconut oil Rs. 139,000 and Rs. 1.47 million; cashew shell oil Rs. 6.24 million and Rs. 4.49 million.

SIZEABLE EXPORT INCREASE FOR ELECTRICAL LAMPS

New heights of export success have been scaled by India's electrical lamps and fluorescent tubes industries. Whereas the export value was a little less than Rs. 4 million in 1971-72, it has improved to an estimated Rs. 6.5 million in 1972-73, according to the Engineering Export Promotion Council, Calcutta.

Fluorescent tube lamps were exported to the tune of Rs. 0.4 million during 1971-72. Even during the first three quarters (April-December 1972), the export value rose to Rs. 2.3 million. Czechoslovakia has emerged as an extremely important market in the period. It bought 680,000 numbers at a cost of Rs. 2.10 million.

Besides the fluorescent tubes, India exports mercury vapour lamps and other electrical discharge lamps, bulbs, miniature bulbs, gas filled electric bulbs, other incandescent glow lamps, fluorescent tube lamp parts and other electrical lamp parts.

The fluorescent tube industry in India has nine manufacturing units, including one in the state sector viz., M/s. Mysore Lamp Works Limited, Bangalore. Others are M/s. Electric Lamp Manufacturers, Calcutta, M/s. Philips India Limited, Bombay, M/s. Hind Lamp, Shikohabad, M/s. Bengal Electric Lamp Works, Calcutta, M/s. Pradeep Lamp Works and M/s. Sylvania Laxman Ltd., New Delhi, M/s. Toshiba Anand Lamps, Cochin and M/s. Zenith Lamps Electricals Limited, Madras. The first three firms have collaboration from M/s. Philips, Netherlands.

The industry's installed capacity for production now is 15.30 million numbers per year. Actual production was of the order of 12.35 million numbers at a value of nearly Rs. 70 million during 1972. Glass tubes, lead in wires and filaments and fluorescent powder are being produced indigenously and the import content in this industry is only 10 per cent. The items to be imported include molybdenum strips and anode strips and some chemicals.

GLS lamps are also manufactured by the public sector firm mentioned above and ten other private units. Installed capacity for this industry is nearly 108.5 million numbers while the estimated production in 1972 at 128 million numbers exceeded the available capacity.

Production capacity for miniature lamps spread over seven units is over 53 million numbers while actual output was over 41 million numbers in 1972. This sector is reserved for small scale units and excepting for miner's lamps further proposals for capacity expansion can be considered favourably. Foreign collaboration proposals will also be allowed on merits for special items.

SEWING MACHINES AND EXPORT TRADE

India's sewing machine industry had an export market of the order of Rs. 6 million in 1971-72. In the first three-quarters of 1972-73, the export value totalled Rs. 4.5 million.

The major markets for complete sewing machines are U. K., Sri Lanka, Afghanistan, Nigeria, Libya and Canada.

While the export contribution of complete sewing machines was Rs. 3.2 million (1971-72), sewing machine parts fetched Rs. 2.8 million; the principal buyers of the parts were Sri Lanka, Indonesia; U. K., Yugoslavia, Hong Kong and Lebanon.

The sewing machine industry has five manufacturing units in the country's organised sector. They are M/s. Jay Engineering Works Ltd., Calcutta; M/s. Rita Mechanical Works, Ludhiana; M/s. Sansar Machines

Pvt. Ltd., Shahdra, (Delhi); M/s. British Machinery Supplier Co. Ltd. Faridabad (Haryana) and M/s. Jay Engineering Works Ltd., Hyderabad.

The installed capacity of the five units is of the order of 533,500 numbers per year. Estimated output in 1972 was 318,000 numbers. It is hoped that the production capacity will increase to the level of 537,000 numbers per year by 1973-74. Production estimated for that year is 600,000 numbers.

The sewing machine industry is open for further industrial licensing. Foreign collaboration is permitted for industrial sewing machines. Import of domestic sewing machines is banned but there is a provision for actual users, to import those industrial sewing machines which are not made within the country.

A 99 per cent indigenous content has been achieved in the industry. The items allowed to be imported are CRCA sheets and strips, Free cutting bars of specified variety, spring steel wire and alloy steel.

INDIAN CUTLERY POPULAR ABROAD

That India-made cutlery is becoming more and more popular every year in the export market becomes evident from the fact that the export value which was only Rs. 4.4 million in the entire year of 1971-72 looked up to the level of Rs. 4.53 million even in the first three quarters of 1972-73. The major categories of cutlery exports are knives, razors and razor blades, scissors and their blades and tableware including spoons and forks as well as handles of cutlery of base metals.

The major variety, however, relates to tableware. According to the Engineering Export Promotion Council, Calcutta, the export value of tabelware cutlery rose to Rs. 3.6 million in 1972-73 as compared to Rs. 2.6 million in the preceding year. Interestingly, U.S.A. and U. K. were the leading buyers of the tableware. The other important markets are Bulgaria and Nigeria.

The export effort of safety razor blades secured Rs. 1.6 million in 1971-72 and Rs. 1.08 million in the first three quarters of 1972-73. Ethiopia and Sudan have been the major customers for these blades.

Scissors and their blades are also active on export front. They fetched only Rs. 0.3 million in 1971-72 against Rs. 0.7 million in the first three quarters of the subsequent year. Zambia and Ethiopia have emerged as important buyers in the latter year.

In the organised sector, there are three manufacturers of good quality cutlery in India. They are M/s. Kishco Cutlery Limited, Bombay; M/s. Pearl Metal Industries, Bombay and M/s. Oriental Metal Pressing Works Pvt. Ltd., Bombay. These units produced 265 tonnes of cutlery items during 1972. The Government of India is prepared to consider future proposals for capacity expansion in the line, and even foreign collaboration proposals.

Import of cutlery items is banned. Although stainless steel sheets are being produced by M/s. Durgapur Alloy Steel Plant, indigenous requirement is not yet fully met and therefore these sheets are required to be imported. Among the raw materials available indigenously, however, are CRCA sheets and brass sheets.

AGARBATTIS ON EXPORT STREAM

India's exports of agarbattis are witnessing constant uptrend in recent years. The exports which were of the order of Rs 10.07 million in 1969-70 rose to Rs. 12.75 million in 1970-71 and further increased to Rs. 14.12 million in 1971-72. Even during the first three quarters of 1972-73 (April-December 1972), the exports fetched Rs. 12.50 million.

U.S.A., as in the preceding year, constituted the largest buyer of agarbattis in the first nine months of 1972-73. It imported worth Rs. 3.15 million. Ethiopia too retained its position of the second important destination having bought worth Rs. 1.45 million, followed by Nigeria at Rs. 1.20 million, Singapore at Rs. 0.78 million, U.K. at Rs. 0.65 million and Canary Islands at Rs. 0.53 million. Nepal, Malaysia, Kenya, Netherlands, Liberia, France and Canada were among other buyers.

In 1971-72, U.S.A. (Rs. 4.08 million), Ethiopia (Rs. 1.38 million), Singapore (Rs. 1.20 million), Nigeria, (Rs. 0.88 million), U.K. (Rs. 0.61 million), Kenya (Rs. 0.44 million) and Malaysia (Rs. 0.36 million) were the leading markets.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

GRINDING WHEELS AND ABRASIVES

India-made abrasives and grinding wheels are gaining growing markets abroad. According to the Engineering Export Promotion Council (Calcutta), the export trade in these products has increased to the level of Rs. 3.4 million in 1972-73 from Rs. 3 million in 1971-72.

The varieties of abrasives and grinding wheels exported include abrasive grains of alumina fuses, abrasive grains of silicon carbide, and other synthetic abrasive grains, as well as grinding wheels of synthetic abrasive grains, abrasive cloths, abrasive paper and similar articles.

The U.K. was the most important buyer of abrasives grains of silicon carbide in 1971-72. It imported nearly 197,000 kg. worth about Rs. 0.95 million out of a total worth Rs. 1.2 million exported by India during 1971-72. U.K. was again the major importer of other synthetic abrasive grains and grinding wheels of natural store and synthetic abrasive grains. Thailand and Uganda also figured prominently as importers of grinding wheels and synthetic abrasive grains. Abrasive cloths, papers and similar articles were exported to the tune of Rs. 1.12 million in the same year.

The grinding wheel sector (borded abrasive) is included in the list of priority industries. There are five manufacturers, namely, M/s. Carborundum Universals Ltd., Madras, M/s. Grindwell Norton Ltd., Bombay, M/s. Krishanlal Thirani and Co., Calcutta, M/s. Industrial Abrasives Cooperative Society Ltd., Bombay and M/s. Thermal Products Ltd., Bombay. Excepting the last, all the manufacturers have foreign collaboration from U.S.A. or West Germany or Japan. The present installed capacity is of the order of 7,000 tonnes per year. In 1971, actual production was 6850 tonnes. The grinding wheel industry is open for further industrial licensing and foreign collaboration proposals are also permitted.

About 80 per cent of the raw material content for this industry is substituted indigenously. But silicon carbide, grain and white abrasive oxide grain bonding chemicals and glass fabric discs are required to be imported. Among the raw materials available indigenously are brown aluminium oxide, grain flourspar and certain other chemicals.

The grinding wheel industry in India has been placed under compulsory export obligation in the current import policy.

The coated abrasives sector has an installed capacity of 312,000 reams per year. In 1972, the output was 198,480 reams plus 645,350 numbers of special coated abrasives. Brown aluminium oxide grains are available indigenously and good progress in import substitution has been made in the manufacture of coated abrasives. Also abrasive grains, abrasive glue, kraft paper, emery grain and cloth are available indigenously. The other raw materials that are imported are silicon, vulcanised fibre and adhesive resin.

FOCUS ON MOTOR VEHICLES INDUSTRY

Though a late entrant in the field, India has made good headway in the manufacture of motor vehicles. The industry is tariff protected, has achieved notable progress in import substitution and is contributing to the economy's export trade substantially.

With three manufacturing units namely, M/s. Hindustan Motors Limted, Uttarpara (West Bengal); M/s. Premier Automobiles Ltd. Bombay and M/s

Standard Motors, Madras engaged in the line, India's *motor car* industry has an installed capacity of 47,400 numbers per year currently. The actual production in 1972 was of the order of 40,400 numbers. Additional capacity to the tune of 257,000 numbers has been approved by the Government of India. The estimated demand by 1973-74 is 75,000 numbers and the targetted production by that year is also of the same quantum.

Of the three manufacturers now, only the Madras firm has technical collaboration with M/s. Triumph Motor Company Limited, U.K.

Under the present industrial licensing policy of the Government of India, the car industry is open for licensing subject to the condition that foreign collaboration is not allowed and import of capital goods or components are not manufactured for new units.

Car imports are normally banned. About 0.5 per cent to 1.5 per cent of the import content is substituted by indigenous material. The imported materials are steel, non-ferrous metals and component packs. Automobile car ancillaries, tyres and some categories of steel are available indigenously.

The installed capacity for the production of *commercial vehicles* is of the order of 62,400 numbers per year. As against this, actual production was 37,470 numbers in 1972. There are 8 manufacturing units engaged in the line and they are M/s. Ashok Leyland Ltd., Madras; M/s. Hindustan Motors Ltd., Uttarpara (West Bengal); M/s. Premier Automobiles Ltd., Bombay; M/s. Standard Motor Products India Ltd., Madras; M/s. Tata Engineering & Loco Co. Ltd., Bombay; M/s. Mahindra and Mahindra Limited, Bombay; M/s. Bajaj Tempo Ltd., Poona and M/s. Simpson & Co., Madras (for vehicular engines only).

Commercial vehicle imports are not normally allowed. As regards the progress in import substitution, 1 to 8 per cent of the import content is substituted with indigenous materials. The raw material position both from indigenous and imported sources for motor car industry applies to the commercial vehicles industry also.

Three manufacturing units, namely, M/s. Enfield India Ltd., Madras, M/s. Escorts Ltd., Faridabad (Haryana) and M/s. Ideal Jawa (I) Pvt. Ltd., Mysore are engaged in the production of *motorcylces*. Their installed capacity is in the neighbourhood of 58,500 numbers per year. Their actual output was about 47,560 numbers in 1972. The combined demand for motor vehicles, scooters, three-wheelers and mopeds has been estimated at 210,000 numbers for the year 1973-74. The motor cycles industry is open for further industrial licensing but foreign collaboration is not allowed for units.

In respect of *scooters*, four manufacturing units are presently active and they are M/s. Enfield India Ltd., Madras; M/s. Automobile Products of India Limited, Bombay; M/s. Escorts Limited, Faridabad and M/s. Bajaj Auto Limited, Poona. The installed capacity for scooter production is 60,000 numbers per year. Actual output in 1972 was 64,330 numbers. It is hoped that the total capacity likely to materialise by the year 1973-74 will be 160,000 numbers. Scooter imports are not allowed normally. Proposal for further expansion are open for licensing but foreign collaboration is not to be allowed for new units.

Coming to the *three-wheeler* sector, three units, namely, M/s. Enfield India Limited, M/s. Automobile Products India Limited, Bombay and M/s. Bajaj Auto Limited, Poona have an installed capacity of 13.800 numbers per year. Production in 1972 was 9,790 numbers. Capacity expected to materialise by the end of 1973-74 is 13,800 numbers.

India's automobile industry is an important foreign exchange earning sector. In fact, in the engineering sector this is the prime source of export earning. The group of automobile and auto parts are reported to have secured Rs. 172 million during 1972-73 as against Rs. 151 million in the preceding year. While the best portion of the foreign exchange is earned by the industry from its export of parts and components, road motor vehicles also have contributed sizeably. They contributed Rs. 275 million in 1971-72. In the year, passenger motorcars (assembled or not) were exported to the tune of Rs. 1.9 million. Singapore, Sri Lanka and Nepal were the major buyers for Indian jeeps and landrover type vehicles. Indian buses fetched Rs. 19 million with Sri Lanka, Arab Republic of Egypt, Nigeria and Bahrein Islands as the principal customers. Arab Republic of Egypt, Sri Lanka, Nigeria and Nepal were again the leading buyers of lorries and trucks. Yugoslavia was another important market. The foreign exchange earning of lorries and trucks was of the order of Rs. 27.2 million.

The export of bodies, chassis and frames (other than motor cylces) totalled Rs. 52 million in 1971-72. Motor vehicles initial equipment was mainly supplied to Nigeria. Export of motor vehicles replacement parts brought in Rs. 20 million mainly from Sri Lanka. Certain categories of motor vehicle initial equipment and replacement parts fetched Rs. 49 million.

Motorcylces were supplied in the year to Sri Lanka, Malaysia and Singapore. Sri Lanka was again the leading buyer of scooters. For motor cycle parts and accessories, the principal customers were Yugoslavia, U.K. and Thailand.

ON ELECTRONICS CORPORATION

Though of recent development, the electronic industry in India has achieved notable records in production, product diversification, quality improvement and export competence. The industry claims about 60 medium and large scale units and over 1600 small scale units, with approximate production value of Rs. 1200 million and export performance of Rs. 60 million every year. The country's successful endeavour in the manufacture of sophisticated electronic equipment employing modern technology and expertise have placed her in the group of those few nations which are on the electronics forefront. In this context, the contribution of M/s. Electronics Corporation of India Limited (ECIL), Hyderabad is particularly mentionworthy.

Originally intended to produce nuclear instruments for monitoring and detecting radiation sources, the Corporation has steadily diversified its product range to include industrial and testing instruments, medical instruments, agricultural and geological instruments. Besides the progress made in the manufacture of professional grade components, it has developed ceramics and rectilinear trimpots. It undertakes the major task of supplying control panels and instrumentation to atomic power stations. It also manufactures small and medium computers. It has taken up the manufacture of several types of microwave antennae based on indigenous know-how.

Recently the Corporation has taken up the manufacture of communication sets, fully transistorised T. V. sets and close circuits.

The Corporation envisages a massive growth in its production of semi-conductors which are expected to be produced at the rate of 8 million pieces a year by the middle of 1974 as against its current output of one million pieces. It would be also producing rectifiers for use in automobiles. ECIL has developed semi-conductor devices for the first time in India and this would save the country an import bill of Rs. 60 to 70 million. In the production of semi-conductor items, it has used fully indigenous know-how.

ECIL is to soon bring out the third generation real time computers. The two versions already available from the Corporation are the TDC 312 and the TDC 16, both incorporating integrated circuits. They have an ambitious programme to manufacture and instal over 140 computers by 1975-76 valued at Rs 200 million. During 1972-73, they marketed 15 digital computers worth Rs. 88 million.

On the telecommunication side, ECIL is engaged in the production of microwave testing equipment for use in the Posts and Telegraphs of India. They have also taken up fabrication and installation work pertaining to 97 feet diameter dish-end antenna at Dehra Dun for the Overseas Communication Service. They are also supplying trans-receiver sets to the Government of India.

The T. V. section of the Corporation produced 2500 sets in October last. But the overall monthly production now is of the order of 800. They will also be producing a special TV receiver which can directly receive telecasts from a satellite. This would be the world's first TV receiver to receive a satellite broadcast.

ECIL has so far saved the country a foreign exchange worth Rs. 80 million through its indigenisation schemes. The yearly increase in foreign exchange saving is indeed impressive. It was less than Rs. 1 million in 1967-68 while it hit the level of Rs. 37.4 million in 1972-73.

DIRECTION PATTERN OF INDIA'S IMPORT TRADE

(In million rupees)

Region	1971-72	1971-72 (April-December)	1972-73 (April-December)
Africa	**1437.65**	**1115.75**	**1280.35**
Arab Republic of Egypt	332.20	291.40	283.75
Sudan	253.25	201.00	332.15
Kenya	176.90	108.65	56.70
Tanzania	184.65	135.75	172.70
North America	**5293.30**	**4019.00**	**1987.50**
U.S.A.	4165.25	3197.50	1491.40
Canada	1128.10	821.40	496.00
Latin America	**57.40**	**45.45**	**45.90**
Brazil	16.40	11.50	9.10
Other American Countries	**9.35**	**8.80**	**1.80**
ECAFE Countries	**3613.15**	**2738.65**	**2869.00**
Japan	1615.65	1238.45	1186.70
Bangladesh	—	—	16.40
Nepal	102.70	69.45	75.75
Iran	1263.55	941.00	906.75
Australia	293.85	225.00	264.70
Hong Kong	22 05	16.85	17.20
Singapore	29.90	23.40	22.90
Sri Lanka	14.50	7.10	6.00
Other Asian and Oceanian Countries	**627.00**	**425.40**	**557.50**
Kuwait	130.40	63.85	178.85
Iraq	35.65	23.35	25.65
Saudi Arabia	383.35	291.00	292.25
East Europe	**2017.50**	**1522.45**	**1484.50**
U.S.S.R.	816.55	611.35	682.15
Czechoslovakia	101.70	70.25	111.75
Poland	495.70	386.15	252.40
Bulgaria	138.05	107.50	35.75
German Democratic Republic	202.40	156.80	145.75
Yugoslavia	43.30	37.25	47.35
European Economic Community Countries	**2493.20**	**1550.90**	**2219.25**
Federal Republic of Germany	1239.00	925.25	1154.90
Italy	244.10	199.95	229.00
France	361.05	274.35	260.00
Netherlands	305.90	228.55	248.90
Belgium	343.10	222.75	326.50
European Free Trade Association Countries	**2467.65**	**1873.90**	**1886.25**
U.K.	2168 65	1648.30	1599.70
Sweden	126.55	89.60	119.40
Switzerland	78.30	59.15	75.40
Other European Countries	**40.15**	**35.80**	**35 00**
Turkey	1.50	1.50	1.15
Finland	25.15	21.70	21.10
Spain	12.95	12.10	12.50
Total of all Countries	**18120.15**	**13635.95**	**12390.15**

Source : Department of Commercial Intelligence and Statistics, Calcutta.

NATIONAL PHYSICAL LABORATORY

Development of T.V. picture tubes and ferrite cores, photo cells, electrostatic photo-copying machine, various types of ferrites and silicon for electronic industry, gas laser and laser system, industrial carbons and aids for the blind, are among the notable achievements of India's National Physical Laboratory, New Delhi.

The broad objectives of the Laboratory include applied research and development in areas of national importance and emerging technologies, calibration of instruments and testing of industrial products and maintenance and research on national standards of measurement at internationally accepted accuracy.

The laboratory has concentrated its efforts in the past five to six years on electronic components, materials and sophisticated equipment and instruments. It has developed about 50 processes and released these to more than 80 industrial firms.

On the electronic components side, the laboratory's efforts have indeed helped the indigenous industry to meet full requirements of ferrites. Nickel Zinc Ferrites, Low Frequency Ferrites, Square Loop Ferrites, Manganese Zinc Ferrites, Dielectric and Piezoelectric materials, Semi-conductor Grade Silicon, Phosphors, High Value Composition Resistors, Thermo-electric material and Conducting Silver Cement are some of the materials developed by this laboratory.

The special advantage of ferrites developed by NPL is that these are made of indigenous mineral iron ore. As a result, the final product is far less expensive than the one imported from abroad. Earlier nickel oxide was imported for making soft ferrites. Now it is substituted with the indigenously available manganese dioxide.

Keeping in view the growing needs of the television industry, a project was taken up by NPL to develop TV components. Ferrite core for the deflaction yoke has recently been developed. The product meets the specifications and has yielded encouraging results.

In the present day technology, silicon is the heart of electronic industry and it is not likely to be replaced in the foreseeable future. This material is used to make transistors, planar devices, rectifiers, silicon controlled rectifiers, integrated circuits etc. However, the present requirements of the country are entirely met by imports. In view of the technological and strategic importance of the material, high priority was given to the development of semi-conductor grade polycrystalline and single crystal silicon. The material has been developed which meets the requirements of the electronic industry. Silicon Rectifiers of 50-60 Amp range have also been developed using silicon developed in the laboratory. The silver-tungsten tablets for mounting the silicon chips have also been developed which meet the requirements of semi-conductor industry.

Scientists of the laboratory have been actively engaged in the development of phosphors based on high purity ZnS & CdS for use in oscilloscope tubes, TV & X-ray screens and electroluminiscent panels. P31 type of CRT phosphors have been fully developed. P-4 type of phosphors for TV screens have also been developed. Electroluminiscent panels using ZnS : Cu phosphor have been successfully made. These phosphors could be used for alphanumeric display of data in the electronic desk calculators.

CdS photo-conducting cells have been made and the process has been released to NRDC for commercial exploitation.

Techniques involved in the fabrication of cathode ray tubes and TV picture tubes such as gun assembly, aquadag coating, phosphor deposition, sealing, processing, etc., have been perfected by NPL. Cathode Ray Tubes of 5 UPI and 5 AQP 31 type with acceleration voltage of 1500 and 3000 volts respectively have been batch-produced. Electronic circuitry for a general purpose oscilloscope kit using 5 UPI tubes has also been perfected.

TV picture tubes of 23 cm, 30.5 cm, 41 cm screen have been fabricated and tested. The manufacture of these T.V. picture tubes, based on the indigenous know-how developed at NPL, will give a boost to the local T.V. manufacturing industry and the prices of the T.V. sets, using indigenous tubes, may come down. With the production of T.V. sets going up for use in Delhi and also the opening of a few more T.V. programmes through satellites, the number of T.V. sets would considerably increase during the next five years. When more sets are in use, more and more T.V. picture tubes would require reconditioning due to poor vacuum, burnt heater, low cathode emission, or bad screens. These picture tubes can be re-conditioned based on the techniques developed at NPL.

Development of an electrostatic photo copying machine by NPL needs special mention. This enables one to copy documents on ordinary paper by a dry process employing a re-usable photosensitive plate. It is a direct positive to positive reproduction. The machine finds intensive applications in libraries, information centres, Government organisations, commercial firms, etc. The imported machine like Xerox costs about Rs. 100.000 or more, while the machine developed by NPL has now been commercially produced at a price of Rs. 20,000. Know-how has been released to three firms who have sold more than 200 machines.

Several methods using electro-magnetic or sound waves are available to help and guide the blind people. It has been shown by NPL that ultrasonic waves can be effectively used for this purpose. Torch and spectacle type models have been made and supplied to institutions of blind men for trials.

A large number of laboratory instruments like bent crystal spectrograph, Linear Drive for Mossbauer spectrometer, infra-red spectrometer have also been developed. Work is in progress on the development of Lang Camera for testing the perfection of single crystals such as of silicon and measurement of dislocation density.

The laboratory is also working on the design, development and batch-production of waveguide components required in microwave systems.

Seamless waveguides required for microwave components have been successfully fabricated by the drawing process based on the technique of changing the available circular pipes into rectangular waveguides. The drawing machine designed and developed for this purpose costs nearly Rs. 10,000. Components like T-junctions, directional couplers, attenuators and horns have been fabricated using drawn waveguides. Complex shapes like bends, transition from one shape to another, have been fabricated by electro-forming techniques. Microwave instruments like Reflex Klystron (similar to 2K28), Voltage Standing Wave Ratio Moter, Universal Klystron Power Supply, Modulation Unit, Bragg's diffraction apparatus have also been developed by the laboratory.

Development of gas lasers and laser system was undertaken for precision physical and engineering measurements and other engineering applications. Both, Brewstor angle and internal mirror type He-Ne lasers have been developed. The process of its manufacture has been released through NRDC to two firms. The working life of this laser is about 2000 hours.

At present whatever ultrasonic instruments or devices are being commercially produced in the country, the transducer part used in all of them is being imported and only the electronic parts is being manufactured by the industries. The objective of this project is to design and develop various ultrasonic instruments, piezo-electric devices and various types of transducers, using indigenous materials. About 10 instruments/devices, have been developed like ultrasonic interferometer for velocity measurement in liquids, ultrasonic transducer for remote control and automation and probes for flaw detectors.

NPL is the only laboratory in India engaged on the development of industrial carbon products. Processes for the manufacture of carbon brushes and blocks, arc carbons for cinema projectors, process and search light carbons, metal graphite brush blocks, midget electrodes for dry cells batteries, carbon granules for microphones, electro-graphitized grades of brushes and blocks for automobile applications have been developed.

NPL has made outstanding contributions in the basic physics research. More than 1200 research papers have been published by the scientists of the laboratory.

In the field of solid state physics the scientists of NPL have contributed on topics like thermo-ionic constants of metals, crystallographic study, polytypism and dislocations, defect centres in alkali halide crystals, Mossbauer spectra and interferometry. The basic physics group is tackling the problem of Josephson tunnelling which eventually would be used as a voltage standard. Similarly, a method has been developed for analysing the ferrites with a view to determine the distribution of Fe_3 in octahedral and tetrahedral interestrices as also the detection of Fe_2 in a given sample.

National Physical Laboratory is the nation's only Warning Centre for Geophysical and Space Disturbances and has been designated as the Associate

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Regional Warning Centre for Geophysical Data and the Associate Regional SPACEWARN Centre for distribution of satellite and space probe information. Its sunspot predictions have been one of the most accurate in the world. This group collaborates with Indian Space Research Organisation in its programme.

NPL has one of the best Glass Technology Workshops in the country. This unit prepares complicated glass equipment for use in the laboratory as well as for the outside research and industrial organisations.

In view of the urgent need of the country for precision glass apparatus required by the research institutions, NPL has set up a pilot for the production of standard graded glass joints and vacuum stopcocks. Several other glass apparatus like vaccum flasks for liquid air temperature, flasks with ground glass joints as well as all type of high vacuum systems, e.g. vacuum distillation, metal evaporation under vacuum and degasing of vacuum valves are made in this unit.

With the rapid industrialization of the country it has become necessary to enforce quality control of industrial products. The laboratory, on the one hand, collaborates with the Indian Standards Institution (ISI) to draw standard specifications and on the other hand, since NPL is the custodian of national standards, the laboratory undertakes calibration and developmental testing in accordance with the relevant specifications for a vast variety of measuring instruments and industrial products.

The laboratory has so far issued about 35,000 test certificates and has helped a number of industries.

For an industrial product, it is not enough that it meets the requirement of standard specifications at a given time. It is equally important that the product works to specifications under certain climatic and environmental conditions and has a certain specified span of useful life. India is a vast country with varying climatic conditions and having extremes of temperature and humidity. For export market, life and environmental tests are of paramount importance. Realising the great importance of the life and environmental tests, the then Electronics Committee had approved NPL as one of the three regional centres for carrying out life and environmental tests of electronic components, instruments and systems. Under this scheme, NPL has started undertaking life and environmental tests on products from the electronic industry. ☐

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MORE JOINT VENTURES ABROAD

Twelve more proposals from Indian firms for establishing joint industrial ventures abroad have been sanctioned by the Government of India in the first half of 1973. Of these, one is in Kenya, one in Sri Lanka, four are in Malaysia, one in Singapore, three in Indonesia, one in Lebanon and one in U.S.A. Including these twelve fresh ventures, there are (as on July 16, 1973) 92 active ventures with Indian collaboration abroad of which 37 have gone on production stream and 55 are under implementation.

The new proposals sanctioned by the Indian Government include that of M/s. Sarabhai Chemicals Private Limited, Ahmedabad for a venture in Kenya for the manufacture of pharmaceuticals. M/s. Oberoi Hotels India Limited, Delhi are to soon start a joint hotel venture in Sri Lanka. In Malaysia the four proposals relate to the manufacture of textiles by M/s. Laxmi Textile Exporters, Coimbatore, metallic flexible tubes and hoses by M/s. Zeverchand Gaekwad (P) Ltd., Baroda, stationery items by M/s. Cambin (P) Ltd., Bombay and tubular heating elements by M/s. Harsha Electric Appliances Co. (P) Ltd., New Delhi. M/s. G.K. Singhania (J & K Organisation), Bombay have a proposal for a joint shipping company in Singapore. In Indonesia, three ventures relate to the production of water meters by M/s. Mahindra and Mahindra, Bombay; textiles by M/s. Century Spinning and Manufacturing Company Limited, Bombay and storage batteries by M/s. Tata Exports Limited, Bombay. In Lebanon, a project for the production of sodium silicate proposed by M/s. Kosmos Chemicals Industries, Madras was approved in principle by the Indian Government. The twelfth new proposal was that of M/s. Ghai Lamba Catering Consultants (P) Limited for a restaurant in U.S.A.

Of the joint ventures already in production with Indian collaboration abroad, there are two in Ethiopia for the production of textiles and soaps. In Kenya, five projects relate to the manufacture of textiles, gripe water, woollens, light engineering products and corks. In Libya, there is a project for the production of pipes which went on stream as early as 1966. In Mauritius, there are four active ventures which have started production of mosaic tiles and rolling shutters, rubber products, textiles and canning. Two projects for the manufacture of engineering goods and razor blades are in production in Nigeria. There is a jute mill that went on stream in early 1971 in Uganda. In Sri Lanka, the areas of manufacture where progress has been reported are sewing machines, glass products and PVC leather cloth. Production of spare parts and automotive components has started in a venture in Iran. Last year, a project for builders' hardware went on stream in Yemen Arab Republic.

Malaysia is one country where maximum number of ventures with Indian assistance are in active production. The products manufactured are steel furniture, cotton textiles, precision and garage tools, confectionery, electric motors, pumps, diesel engines, enamelled copper wire and electrical accessories, time and automobile chains and cycle and industrial chains. In fact, there are 20 more projects that are in various stages of implementation in Malaysia.

In Singapore, a Bombay firm has started production of automobile accessories. In Thailand, there are two projects that have started production and they relate to a steel mill and a synthetic fibre spinning unit. In Ireland, U.K. and Canada, there is a project each which has started production, namely of tufted carpet yarn, asbestos cement products and hardboard respectively. Interestingly, Indian collaboration was sought by West Germany for two projects that have started production of oil engines and rice milling machines and hose clips.

A broad review of the various products either manufactured or proposed to be manufactured in the joint ventures with Indian collaboration abroad would indicate Indian expertise in textiles including woollens; soaps, light engineering products, paper and pulp, cast iron products, bicycles, pharmaceuticals, solvent extractions, mosaic tiles and rolling shutters, rubber products, cement, readymade garments, sugar, jute manufactures, steel pipes, refrigerators and air-conditioning, sewing machines, glass products, PVC leather clothing, electric motors and pumps, precision tools and garage tools, electric fans, air compressors, water meters, storage batteries, diesel engines, builders' hardware, steel pipes, wire products, asbestos cement products and industrial machinery.

MEGA P.A. EQUIPMENT AND EXPORT TRADE

M/s. Happy Sound Industries, 247 Okhla Industrial Estate, New Delhi is an important exporter of mega P.A. equipment contributing over one fourth of India's total export earning in the line. The firm specialises in the export of amplifiers, microphones, Units and P.A. accessories and has secured about Rs. 0.75 million in foreign exchange during 1972-73. Recently, they have received and successfully executed a prize order from the United States of America. The order was valued at U.S. $ 3000. Having entered the export market as

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far back as 1964, the firm has a record of exporting to about 25 countries including Iran, Thailand, Nigeria, German Federal Republic, South Yemen People's Republic, Greece, Netherlands, Belgium, Cyprus, Arab Republic of Egypt, Kenya, Sudan, Fiji Islands, Lebanon, Kuwait, Iraq, Afghanistan, Nepal, Somalia and Malta. The firm's mega products are particularly popular in Iran. The company has an annual production of about Rs. 1.5 million of which half is exported.

India's telecommunication equipment has been earning growing sums of foreign exchange every year. During 1971-72, the export value was about Rs. 8.23 million. During the first three quarters of 1972-73, (April-December 1972), the exports totalled Rs. 5.54 million. Besides telephone and telegraph equipment, mega P.A. equipment figures prominently in the export trade. Amplifiers, microphones, loudspeakers and microphone parts constitute the major categories of the equipment. Microphones, for instance, were exported to the tune of about Rs. 0.20 million in 1971-72 mainly to Iran, Iraq, Sudan and Windward islands. Microphone exports improved to the level of Rs. 0.30 million in the first three quarters of the subsequent year. During this period, Greece and Nigeria emerged as important markets while Sudan, Thailand and Denmark were also prominent in the importers list. Loudspeakers constitute another important area and their export earning in 1971-72 was of the order of Rs. 0.12 million and Rs. 0.36 million in the first three quarters of the year that followed. Greece, Singapore and Iran were the prime buyers in 1971-72, while Singapore and Iran were the major purchasers in the following year. The export value of amplifiers was Rs. 0.74 million in 1971-72. Sudan, Mauritius, Iran, Burma, Iraq, Somalia, Lebanon, Kenya and Dubai were among the leading importers. In the first three quarters of 1972-73, the export trade of amplifiers totalled Rs. 0.45 million with Iran, Lebanon, Sudan, Thailand, Mauritius, Kuwait and South Yemen Peoples Republic as the principal importers. Microphones and parts is another line of export improvement and have fetched Rs. 0.72 million in 1971-72 and Rs. 0.91 million in the first three quarters of 1972-73. Nigeria, Iran, Sudan, Iraq and Greece were among the buyers in 1971-72 while Nigeria and Thailand absorbed more than half of these exports in the first nine months of the year that followed.

EXPORT SUCCESS IN FORGINGS

In its recent participation in the trade fair at Leipzig (German Democratic Republic), M/s. Bharat Forging Company Limited, Post Box No. 57, Poona-1, has made quite an impact for their forgings, finish machined crank shafts and other components. Subsequent to the fair, the firm's representatives had also visited Poland, Czechoslovakia, Federal Republic of Germany and Italy and found sizeable markets for their wares.

The firm has orders on hand worth Rs. 3.3 million for a total tonnage of 1215 tonnes. These orders are mainly from Poland and Greece. From Poland alone, the orders on hand are of a value of Rs. 3.15 million for the supply of 5,000 crank shafts, another 5,000 axlebeams and 1800 axle shafts (RH & LH). From Greece, the pending order is for the supply of 1000 numbers of crank shafts and a similar number each of connecting rods, camshafts and crank gears. The party in Greece is expected to place similar orders in the very near future, the execution of which will be required to be completed almost immediately.

In addition to the above two major orders to be executed during 1973-74, the firm anticipates orders from four more countries in the same year. The countries are the United Kingdom, German Federal Republic, Taiwan and U.S.A. The total value of the anticipated orders is estimated at Rs. 13.92 million, of a total quantum of 2273 tonnes. The anticipated order from West Germany is of the order of Rs. 5.4 million for the supply of crank shafts and beams. From the U.S.A., the firm expects to receive orders worth Rs. 5.42 million for the export of central axles, articulated rods and master rods. Taiwan is expected to place a firm order worth Rs. 3.23 million for the supply of crank shahfts. The U.K. is also to seek the firm's supply of crank shafts worth Rs. 0.12 million.

Aside from the orders on hand and in anticipation for the year 1973-74, the firm has quoted for supply of their products to Brazil, U.S.A. and Thailand and the quotations likely to materialise are estimated to be of the order of Rs. 81.86 million. The Brazilian market is likely to place orders for crank shafts and axle tubes worth Rs. 46.4 million and the U.S. market is to seek the import of rim single flange and double flange track rollers worth Rs. 34 million. Links, propeller shaft flange yoke and rear axle spider are the products for which the Thai market is likely to place orders on the Indian firm at a value of Rs. 1.37 million.

Some companies in Japan have come forward to supply raw material to be forged at the Poona plant of the firm to be re-exported to third countries nominated by them.

SANITARY FITTINGS IN EXPORT TRADE

India's overseas supplies of sanitary and plumbing fixtures including taps and cocks were valued at Rs. 3.23 million during 1971-72. During the first nine months of 1972-73, the export earning of these items was of the order of Rs. 2.96 million. Of this, sanitary fittings accounted for Rs. 1.66 million and the share of taps and cocks was valued at Rs. 1.30 million. Sanitary fittings were mainly supplied to Nigeria, Nepal, Mauritius, Kenya and Sudan, while Malaysia, Singapore, Saudi Arabia, Nigeria and Hong Kong were the prominent buyers for taps and cocks.

M/s. Kashi Taps and Cocks Manufacturing Co., Mathura Road, Delhi, a manufacturer of sanitary fittings and brass water fittings has succeeded in exporting these products to the tune of more than Rs. one million during 1972-73. Their exports were directed mainly to Malaysia, Singapore and Sudan. The F.O.B. value of purchases by these countries was of the order of Rs. 741,500, Rs. 160,500 and Rs. 81,833 respectively. The other buyers for the firm's products included Yemen Arab Rebublic, Cyprus, Malawi and Mauritius.

The export effected by the firm in 1971-73 is stated to represent 46 per cent of their total production in the year. In the preceding year, they were able to export only 29 per cent of their production. Even so, the firm claims to have contributed 17 per cent of the total exports of these items from India in that year. For 1972-73, their estimated share is 30 per cent of the total exports of these items from India.

CABLES AND WIRES FETCH MORE

In the wide spectrum of India's engineering industries, the electrical wires and cables industry has assumed prime importance, next only to automobiles and auto parts. The exports of the industry scaled new heights during 1972-73. According to the Engineering Export Promotion Council, Calcutta, the exports are estimated to have fetched Rs. 126 million as compared to Rs. 112.5 million in 1971-72. In fact, this particular industry has constantly witnessed uptrend in exports from year to year. The industry's overall export performance was only Rs. 16.77 million in 1967-68.

Among a large number of units in the line that have contributed to the growth of this industry in terms of production and exports, the example of M/s. Asian Cables Corporation Limited, Backbay Reclamation, Nariman Point, Bombay is noteworthy. It exported worth nearly Rs. 5 million during 1972-73. Besides, the firm has on hand export orders of a value of about Rs. 8 million. On the basis of pending export orders of such a sizeable value, the firm expects to cross the Rs. 10 million mark during 1973-74.

The Bombay firm's export range covers electrical wires and cables of copper and aluminium of all types including rubber and paper insulated and wires for low voltage as well as hight voltage power, mining cables, enamelled and super enamelled wires, telephone cables, aluminium cables, steel reinforced etc. The firm's products are in good demand in markets the world over.

The industry manufactures a wide variety of cables and wires. The range broadly includes insulated wires and cables, bare copper conductors, aluminium conductors, steel reinforced (ACSR and ACC conductors), VIR and PVC cables and power cables - PILC and PVC including special cables, such as mining, quarry and trailing cables, telephone cables and winding wires.

BOOST IN BICYCLE EXPORT

Export trade in Indian bicycles and parts has crossed the Rs. 100 million mark during 1972-73. In fact, in India's engineering sector, the bicycle industry has in recent years emerged as a vital area of export earning, next to automobiles and cables and vires. In the year 1972-73, bicycles and parts in a variety of specifications have brought in Rs. 103 nillion, according to the Engineering Export Promotion Council, Calcutta. In the preceding year, the exports amounted to Rs. 80.5 million.

M/s. Projects and Equipment Corporation, a public ector undertaking recently bagged an export order for ight weight sports bicycles from Canada valued at Rs. 0.80 million. The order is expected to be completed by October 1973.

The details of categorywise bicycle exports are available up to the first three quarters of 1972-73 (April-December 1972). The total export value in the period was Rs. 80 million, of which complete bicycles netted Rs. 21 million while bicycle parts secured Rs. 59 million.

Iran constituted the biggest buyer of complete bicycles during the period reviewed. It imported worth Rs. 5.45 million. Indonesia closely followed Iran having bought worth Rs. 5.43 million. Nigeria which was the second best destination last year, imported worth Rs. 3.32 million, followed by U.S.A. at Rs. 1.65 million and Bangladesh at Rs. 1.41 million.

For Bicycle parts, Nigeria topped the list of buying countries in April-December 1972, as in the last year. Its purchases were valued at Rs. 15.10 million during the first nine months of 1972-73. Indonesia was the next important destination having absorbed worth Rs. 10.20 million. Singapore (Rs. 4.31 million), Iran (Rs. 3.35 million), Thailand (Rs. 2.48 million), Tanzania (Rs. 2.21 million), Malaysia (Rs. 2.16 million) were prominent among other destinations.

EXPORT PERFORMANCE AND POTENTIAL

INDIA'S EXPORT TRADE

AN OUTLOOK

Representing an increase of 20 to 21 per cent as compared to the previous year, India's export trade is estimated to have exceeded Rs. 19,000 million during 1972-73, which would be Rs. 1400 million higher than the target set for that year. This was stated by the Minister of Commerce, Prof. D. P. Chattopadhyaya at a recent meeting of the Board of Trade. The boom in exports during 1972-73 was, however, facilitated by a number of factors which might not repeat themselves in the current year, cautioned the Minister. To prevent any slackening in the export momentum, the Commerce Ministry have undertaken special steps.

The essential ingredients of a long-term export policy are being currently identified by a Working Group. It is visualised that as part of the long term planning objective, net aid would be reduced to Zero by the end of the Fifth Five-Year Plan. For realising this objective the aspect of export promotion is being emphasised. "A substantial break-through in exports cannot be achieved without a rapid expansion in production base or a full utilisation of the existing capacity which can generate the required rate of exportable surplus." The Minister stated that a keener consciousness has emerged in India over the past few months "for forging greater coordination than ever before between production policy ond export policy."

Referring to the unprecedented increase in the export earning of leather and leather manufactures during 1972-73, the Minister stated that the export success in the line was largely on account of strong demand from overseas markets in respect of E.I. tanned hides and skins and chrome tanned leather. Even finished leather, whose volume is comparatively small in the trade, showed significant improvement. The Minister mentioned that in order to make more semi-processed hides and skins available for indigenous processing units, their exports have been canalised through the STC and the pattern of leather exports has been changed. Quantitative restrictions have been placed on the export of semi-processed hides and skins by means of a quota system.

Export performance in respect of cotton textiles was also creditable. According to the Cotton Textile Export Promotion Council, the export value of cotton textiles amounted to nearly Rs. 1580 million during 1972-73, showing an increase of about Rs. 430 million over the exports in the preceding year. This improvement in exports can be attributed to factors like a reasonably comfortable supply position of Indian cotton, the Cotton Conversion Deal with Russia, the voluntary export scheme adopted by the industry since July, 1972 to export 15 per cent of its production and the special emphasis laid on maximising exports to quota countries. Depending on the supply situation of the cotton and adequate availability of power, the Minister expressed hope that cotton textile exports would improve further in the current financial year.

Referring to another growth point in the country's textile exports, namely, readymade garments, Prof. Chattopadhyaya announced that a scheme has been worked out with a view to meeting the tastes and requirements of sophisticated countries abroad. Under the scheme, registered exporters would be allowed to import under customs bond, fabrics of certain specified varieties exclusively for export production of readymade garments. To meet the requirements of developed countries and to improve the export of processed goods, it would be necessary to set up specialised weaving and knitting capacities besides modern processing facilities, the Minister added. Mixed fibre production within the range of availability can also be undertaken for its exports.

On the question of promoting the export of jute manufactures, the Minister referred to the recent endeavours for a common policy between India and Bangladesh. Further to improve the competitive position of the Indian carpet backing *vis-a-vis* synthetics, the structure of export duty has been suitably revised from time to time. Happily, the jute industry has made good progress in modernising its machinery and removing the machinery imbalance in the spinning sector.

In contrast to the slackening tendency in 1971-72, the exports of non-traditional goods, particularly engineering goods and chemicals and allied products, showed signs of recovery during 1972-73. "The rate of world demand for our non-traditional goods is increasing at a higher pace than our traditional products." The export of engineering goods during 1972-73 was of the order of Rs. 1500 million showing a 19 per cent increase over the previous year. To encourage the export of higher value added engineering items, imported steel is being made available only in respect of export contracts where the f.o.b. value is at least 25 per cent higher than the value of all inputs at c.i.f. import prices.

The public agencies in India have been playing an important role in the foreign trade sector. In the last five years, the export effort of the State Trading Organisation of India has quadrupled and for the first time its exports have outstripped imports during 1972-73. In the same year, the export effort of Minerals and Metals Trading Corporation rose to the tune of Rs. 1083 million as compared to Rs. 868 million in the preceding year, the Minister added.

TRENDS IN INDIA'S EXPORT TRADE

Including re-exports, India's export trade in the first eleven months of 1972-73 (April 72 - February '73) reached a total of Rs. 17,030 million showing an increase of Rs. 2930 million or 21 per cent over the exports in the corresponding period of 1971-72.

Over the first four years of the Fourth Five-Year Plan, the export value rose year to year. In these years, the annual rates of growth were : 4.2 per cent in 1969-70; 8.6 per cent in 1970-71; 4.6 per cent in 1971-72 and 21 per cent in the first eleven months of 1972-73. The target rate of annual growth envisaged in the plan period is seven per cent.

On the other hand, India's import bill witnessed a fall, at a total of Rs. 15,830 million in the eleven months' period of April 1972 - February 1973 as compared to Rs. 1667 million in the same period of preceding year. Thus, the favourable balance of trade in the 11 months period 1972-73 was of the order of Rs. 1205 million.

(Rs. million)

	1969-70	1970-71	1971-72	1972-73	1971-72
				(April - February)	
Imports (c.i.f.)	15821	16342	18120	15828	16669
Exports incl. re-exports (f.o.b.)	14133	15352	10066*	17033*	14095
Balance of trade	–1668	–990	–2054	+1205	–2574

*including exports to Bangladesh.

In the first three quarters of 1972-73, the major items that have registered improvement in exports were leather and leather manufactures, cotton textiles, jute manufactures, handicrafts, tobacco, fish, cashew ernels, oil cakes and castor oil. Some of the growth tems like engineering goods, iron ore, chemicals and llied products which were marked by a slackening endency during 1971-72 revealed significant signs of ecovery. The spurt in the case of leather and leather nanufactures was due to favourable trading conditions n world markets. The overseas demand for E.I. tanned ides and skins and chrome tanned was particularly trong in the European Common Market countries and East Europe. The improvement in the export trade f cotton piecegoods was chiefly due to the Cotton Conversion Deal with the Soviet Union and an ppreciable increase in the offtake by U.K. and U.S.A. n the case of cotton apparel, the export rise was argely on account of better demand from Sweden, U.S.S.R., U.S.A., German Federal Republic and France. For the first time, Bangladesh emerged as a ouyer of Indian cotton textiles.

The international market for Indian gems and ewellery has been buoyant. The demand is particularly ncouraging from U.S.A., Belgium, Hong Kong, Japan and the U.K. Besides the increase in the export of pearls and precious stones, quite a few handicraft products of India have caught up world demand such as for hand-made carpets and druggets, metal artware and woodwork.

INDIAN SAREES BRING MORE FOREIGN EXCHANGE

Indian sarees brought in foreign exchange to the tune of Rs. 28.40 million during the first three quarters of 1972-73, registering a sizeable improvement even over the export value during the full preceding year at Rs. 24.20 million.

During April-December 1972, silk sarees constituted the major area of export growth which brought in Rs. 8.45 million as compared to Rs. 7.43 million in the entire preceding year. In this group, zari embriodered sarees over 90 per cent silk handloom secured Rs. 1.85 million. Kenya, U.K., Poland and U.S.A. were the main purchasing countries. Other silk sarees over 90 per cent silk handloom earned Rs. 4.72 million. These were mainly sought by Singapore, Poland, Federal Republic of Germany, U.S.A., U.K., Malaysia and Mauritius. Zari embriodered silk sarees, yet one more variety active on export front fetched Rs. 1.88 million and Federal Republic of Germany, U.S.A., Poland and France were the main buyers.

Mill-made piecegoods sector contributed the next best, securing foreign exchange just in the neighbourhood of silk sector's. As against Rs. 5.53 million in 1971-72, the export value rose to Rs. 8.25 million during the first nine months of 1972-73. Quite a few categories, such as Powerloom Grey sarees, other powerloom sarees (except Grey), sarees of combed yarn and card yarn (machine printed), handprinted sarees, piece dyed, yarn dyed and sarees of card yarn (bleached) were mainly supplied to Bangladesh, Mauritius, Saudi Arabia, Singapore and Muscat.

Securing over Rs. 3 million, sarees made of handloom piecegoods was the other important category. White sarees, printed sarees, dyed sarees and coloured sarees were the principal varieties active in exports. Bangladesh and Sudan were the main importing countries. Sarees made from synthetic fibres were supplied overseas to fetch Rs. 2.85 million. Nylon sarees, handloom rayon sarees and mill rayon sarees were mainly bought by U.K., Fiji Islands, Mauritius, Nigeria, Singapore, Bangladesh and Sudan.

Besides, haddloom silk sarees embriodered with real zari and imitation zari and handloom sarees of manmade fibres embriodered with zari together netted Rs. 1.26 million. Kenya, Singapore, U.K., and U.S.A. were prominent among the purchasing countries.

IRON ORE TO COST LESS

The cost of Indian iron ore exports to Japan is to be reduced by about fifty per cent by the middle of next year. This reduction in c.i.f. price of the ore would be possible by savings in ocean freight with the use of large ships when the Visakhapatnam outer harbour project would be completed by June 1974.

The ocean freight is estimated at $ 3.50 per tonne for forty thousand nautical miles in ships of thirty thousand dwt while the cost will be only $ 1.80 per tonne carried in ships of more than 100,000 tonnes dwt.

India is to export 61.26 million tonnes of iron ore to Japan by the end of March 1980, under the existing contract between the two countries.

The Visakhapatnam outer harbour, when completed, would be used to load 46.50 million tonnes of iron ore into larger ships. The balance of 14.7 million tonnes would be loaded in smaller ships from the inner harbour.

The Visakhapatnam harbour can now accommodate vessels of only up to 35,000 tonnes with draft limitation of 9.9 metres. The construction work of the outer harbour project is being completed expeditiously. The construction of North breakwater and reclamation bund had already been complete.

It is thus hoped that by June 1974, the first large ship of more than 100,000 tonnes dwt could be received at the outer harbour for loading.

FURNITURE ON EXPORT STREAM

India-manufactured furniture is maintaining steady demand abroad. From Rs. 4.25 million in 1968-69, the exports improved to Rs. 4.55 million in 1969-70. It registered sharp increase to fetch Rs. 6.50 million in 1970-71 and further improved to Rs. 6.67 million in 1971-72. During the first three quarters of 1972-73 (April-December 1972), the exports brought in foreign exchange at a value of Rs. 5.06 million.

During the first nine months of 1972-73 (April-December 1972), chairs of iron and steel constituted the significant area of export which earned Rs. 1.20 million. Quantumwise, 0.33 million kgs. worth of chairs were supplied to overseas markets. Nigeria, Saudi Arabia, Kuwait, Zambia and Siera Leone were the leading markets.

Wooden furniture and furniture parts (excluding artware) was yet another variety active in exports. It brought in foreign exchange equivalent to that of iron and steel chairs (Rs. 1.20 million). In terms of quantity 0.14 million kgs. of wood furniture and parts were supplied mainly to Federal Republic of Germany, Muscat, Nepal, Bangladesh, Sweden, U.S.A., Japan, Dubai and Bahrein Islands.

Steel furniture for office and household purposes, wickwork furniture of bamboo, other furniture of iron and steel and parts, bedstead of wood, mattresses, medical-dental furniture and parts, chairs of wickwork and bamboo, operation tables and chairs made of wood were the other varieties exported. Nepal, Lebanon, Muscat, Abu Dhabi, Bahrein Islands, Dubai, Malaysia, Kuwait and U. K. were the prominent purchasing countries.

INDIAN BOOKS POPULAR ABROAD

Indian printed books are in rising demand abroad. During 1971-72, Nepal was the biggest buyer which purchased books worth Rs. 3 million out of the total export value of over Rs. 11 million. U.S.A. constituted the next best purchasing country. Its imports totalled Rs. 1.65 million during the year.

Besides these two significant markets, a large number of countries imported Indian books. Of these, U.K. (Rs. 0.95 million), Singapore (Rs. 0.63 million), Sri Lanka (Rs. 0.48 million), Malaysia (Rs. 0.47 million), Tanzania (Rs. 0.33 million), Kenya (Rs. 0.31 million), South Africa (Rs. 0.25 million) and Nigeria (Rs. 0.24 million) were prominent.

In the first nine months of 1972-73 (April-December 1972), the export brought in Rs. 9 million. U.S.A. emerged as the leading buyer having bought worth Rs. 2.28 million. Arab Republic of Egypt, the second important buyer imported worth nearly Rs. 1 million, followed by U. K. at Rs. 0.80 million and Singapore at Rs. 0.60 million.

Bangladesh emerged as a significant buyer during the period under review of 1972-73 with an intake of nearly Rs. 0.50 million. Nepal, Nigeria, Malaysia, Federal Republic of Germany, Sri Lanka and Afghanistan were among other markets.

PROFILE ON BHARAT HEAVY PLATES AND VESSELS

M/s. Bharat Heavy Plates and Vessels Limited, Visakhapatnam possesses a superior degree of know-how in cryogenic technology. The firm has the facility of collaboration with M/s. L' Air Liquide of France, one of the best known firms in the world in the design and manufacture of air gas separation plants. With the know-how available, the company is in a position to offer air separation plants for the production of oxygen, nitrogen, organ as well as gas separation and low temperature purification plants from the smallest to large capacities. Work on three large oxygen plants, a large liquid nitrogen wash plant and a number of small capacity oxygen plants is in progress and these units of the company are expected to be commissioned in early 1974.

With the planning for considerable increase in the steel production capacity and the change over to the use of coal and fuel oil as the starting material for the production of fertilizers, the Indian industry felt the need for large tonnage oxygen plants. The fertilizers units also require high capacity final synthesis gas purification units to reduce the impurities to practically zero. One of the most suitable processes for this has been identified as the scrubbing of the synthesis gas with liquid nitrogen. In view of these requirements and also the potential need for liquefaction of gases like coke oven gases and separation of the constituents, BHPV has specialised in the design and manufacture of air and gas separation plants.

The company has anticipated the requirement for transportation and storage tanks for liquid oxygen, liquid nitrogen and other constituent gases in liquid form at very low temperatures and has also acquired the know-how for design and fabrication of double walled vacuum insulated tanks of a wide range of capacities. Deliveries of these are also expected to commence from early 1974.

With the addition of air and gas separation plants and vacuum insulated vessels to its range of manufacture, the company has facilitated the increased availability of equipment to the fertilizer and similar industries. While during the first two or three years of the BHPV factory, supplies were restricted only to meet the indigenous demand, it is now looking forward to export fabricated equipment. Already one or two foreign firms that have used the equipment manufactured by the Indian firm have evinced keen interest in the purchase of the equipment for projects undertaken by them in third countries. Hopefully the Visakhapatnam firm will be soon in a position to export equipment to various countries besides meeting the domestic demand.

BHPV's range of manufacture covers heat exchangers, pressure vessels, digesters, columns, technological structurals required by fertilizer, chemical and petrochemical industries and storage vessels. The plant's installed capacity is in the neighbourhood of 23,000 tonnes per year. It was completed in mid 1971 and trial production commenced as far back as July 1969. During 1971-72, the quantum of plant's production was 2475 tonnes while in the ten months of 1972-73 the output rose to over 3900 tonnes. Besides the collaboration that the firm has entered with the aforementioned French firm for the production of air and gas separation plants, it has also access to the know-how of an American firm for the manufacture of multilayer vessels. The American collaboration is to provide know-how for the production of high pressure multilayered vessels required for synthesis of ammonia, urea, methanol and other organic products.

BHPV has plans to manufacture electrostatic precipitators and forged high pressure valves and tonne containers for chlorine and sulphur dioxide.

FACTS ON STEEL FORGING INDUSTRY

A basic feeder industry catering to the requirements of several engineering industries, the steel forging industry has made good headway in India. There are fiftyone units in the organised sector manufacturing steel forgings. Of them, five are in the public sector, namely, M/s. Central Inland Water Transport Corporation Limited, Calcutta; M/s. Garden Reach Workshop Limited, Calcutta; M/s. Praga Tools Corporation Ltd., Secunderabad; M/s. Republic Forge Co. Ltd., Hyderabad and M/s. Heavy Engineering Corporation (Foundry Forge Project), Ranchi.

The present installed capacity of the forging industry is nearly 160,800 tonnes a year. Estimated production during 1972 is 72,000 tonnes.

Under the current industrial licensing policy of the Government of India, the steel forging industry is open for further licensing and foreign collaboration can be considered on merits. In fact, of the existing 51 manufacturing units in the line, 12 units have technical/financial collaboration with reputed firms from U.S.A., France, Switzerland, U.K. and West Germany.

Iron and steel forgings are active in India's export field also. During 1971-72, the exports were of the order of Rs. 1.33 million. Yugoslavia, Kuwait, Kenya and Greece were the important buyers.

Among the basic raw materials required for the forging industry, those that are available indigenously are mild steel, carbon steel, alloy steel bloom, billets, slabs, squares, rounds and steel dye blocks.

Steel forgings, particularly those of the sophisticated form have sufficient export potential.

TEA INDUSTRY
A REVIEW

India, the homeland of tea, as known internationally, is one of the biggest producers of quality tea in the world. Besides achieving rapid strides in production, tea industry is bringing in sizeable amount of foreign exchange every year. Popularity of Indian tea is growing among world consumers on a large scale because of the industry's capability to change the pattern of production, accurate blending techniques as per the tastes of sophisticated consumers and marketing ability at competitive prices.

India's total area under tea production by the end of 1970-71 was of the order of 35.67 million hectares. Of this, the area in the North was 28.27 million hectares and that in the South was 74,000 hectares. In terms of percentage, the ratio comes to roughly 79 and 21 per cent respectively. The average yield per hectare is 1171 kgs. in the North while it is 1385 kgs. in the South. In the North, tea production is mainly confined to Dooab and Tarai in West Bengal, Ranchi in Bihar, Dehradoon in Uttar Pradesh and Kangra and Mandi in Himachal Pradesh.

Tea production has consistently registered uptrend during the last few years–393.58 million kgs. in 1969, 418.51 million kgs. in 1970, 433.32 million kgs. in 1971 and 451.98 million kgs. in 1972. During 1972, North India contributed about 78 per cent in the total production while the share of South India was of the order of 22 per cent. Interestingly, the actual production at 452 million kgs. in 1972-73 even outstripped the targetted figure set at 446 million kgs. for the year. For the current financial year (1973-74), the target has been placed at 460 million kgs.

Tea industry is one of the major foreign exchange earning sectors of Indian economy. It has witnessed consistent uptrend in exports. During 1969-70, the exports which were of the order of Rs. 1246 million, shot up to Rs. 1487.5 million in 1970-71. They further witnessed sharp rise at Rs. 1553.5 million in 1971-72. During 1972-73, the exports are estimated to have fetched Rs. 1567 million. -In terms of quantity, 202 million kgs., 206 million kgs. and over 207 million kgs. were supplied overseas during 1970, 1971 and 1972. It contributes about 10 per cent in the country's total export earning every year.

During 1971-72, black tea (leaf) constituted the largest single variety which brought in bulk of foreign exchange. It earned Rs. 1426.35 million. Quantumwise 188.94 million kgs. were supplied to overseas markets. U.K. was the major market for this variety whose total intake was valued at Rs. 501 million. It bought 68.20 million kgs. Next to U.K., U.S.S.R. was the second biggest buyer which purchased worth Rs. 327.75 million (40.52 million kgs.) Arab Republic of Egypt imported worth Rs. 68.83 million (10.58 million kgs.) while Sudan bought worth Rs. 65.23 million (10 35 million kgs.). U.S.A. and Poland were yet two more markets of sizeable intake in the order of their purchases. They imported worth Rs. 59.75 million (7.98 million kgs.) and Rs. 46.60 million (6.06 million kgs.) respectively.

The purchases of other buyers were: Ireland Rs. 41.17 million; Iran Rs. 41.10 million; Iraq Rs. 40.57 nillion; Afghanistan Rs. 40 million; Federal Republic of Germany Rs. 38.20 million; Canada Rs. 28.10 nillion; Australia Rs. 20.40 million and Netherlands Rs. 19.95 million.

Black tea in packet (up to 20 kgs.), the next mportant category fetched Rs. 93.35 million. Sudan vas the topmost buyer which absorbed the bulk valued at Rs. 59.97 million. Afghanistan, Dubai, Jordan, Bahrein Islands, Qatar and Arab Republic of Egypt vere prominent among other markets.

Black tea (dust) was supplied to overseas markets to fetch Rs. 30.20 million (4.27 million kgs.). Afghanistan alone imported the bulk at a cost of Rs. 19.21 million (2.71 million kgs.). U.S.S.R., Iran, Dubai, Qatar and Bahrein Islands were the other significant buyers.

Green tea was yet one more variety active in exports which secured Rs. 13.25 million. Afghanistan was the principal importer which alone bought worth Rs. 10.45 million.

The principal competitors of Indian tea in the international markets are Sri Lanka, Indonesia, Kenya, Uganda, Tanzania, Malawi, Mozambique and Argentina. With an objective to make Indian tea more competitive in the world market, the Government of India took a series of measures including abolition of export duty on tea and simultaneous rebate on excise duty on exports based on F.A.S. price. A Tea Board has been set up by the Government of India with a view to make promotional efforts, both in terms of *generic* promotion and *uninational* promotion. The aim of *generic* promotion is to increase consumption of tea in general in the world market while that of *uninational* promotion is to improve and increase consumption of Indian tea. The Board operates through 8 tea councils which are located abroad in U.K., U.S.A., Australia, Ireland, Federal Republic of Germany, France, New Zealand and Canada. Besides, 5 foreign offices have been established at London, Brussels, Sydney, New York and Cairo. Recently, a Tea Trading Corporation has also been set up in the country mainly for the export of blended and packet teas.

Simultaneously with the achievement in the field of production and export, the industry's efforts towards progressive diversification in presentation of tea in new blends and packs are on the way of progress. The research work carried out under the schemes financed by the Tea Board recently helped to evolve 3 processes for instant tea. Accordingly, the Calcutta University and the Central Food Technological Research Institute (CFTRI), Mysore have developed three processes for making instant tea. Of these, in the two processes developed by the Calcutta University, black and green tea leaf have been used as raw material while in the third process which is developed by the CFTRI, green leaf tea has been used as raw material. All these processes have yielded very satisfactory products.

Indian instant tea is well received in the world market and the demand for the same is on rise. Cold water soluble instant tea is also produced in India and has very good response from the consumers abroad. This variety of tea is being currently produced by M/s. Tata Finlay Limited, at Munnar in Kerala. Hot water soluble tea is also produced in the country by M/s. Food Specialists Limited, Cholady, Tamil Nadu directly from green tea leaf as against black tea used in the USA for this purpose. The annual installed capacities of this units are of the order of 1.5 million lbs. and 2.4 million lbs respectively. The entire production of these varieties is earmarked for exports. Indian instant tea is cent per cent instant and does not contain any food additives. During 1971, the production of instant tea was 255,020 kgs.

PEACEFUL USES OF ATOMIC ENERGY

India's Atomic Energy Commission is collaborating with Indian Council of Agricultural Research for improved production in rice, groundnut and sunflower. The Commission is also taking active role in pest control by the use of nuclear energy.

Besides, a big experiment is going on in Kerala in the field of coconut palm. To the question whether India could do without foreign collaboration to develop nuclear energy for peaceful purposes, the answer would be that as far as thermal reactors are concerned, the country is pretty much on its own.

The Commission is also putting up fast breeder reactors on its own for the Third Atomic Energy Power Station at Kalpakkam in Tamil Nadu.

PERFUMERY FROM STRAWBERRIES

The Regional Research Laboratory (RRL), Jorhat, has developed a process for the preparation of strawberry aldehyde which is widely used in perfumery industry for the manufacture of Agarbatti. It is a colourless liquid having a boiling point of 111°-114°C. Condensation of acetophenone and ethyl chloro-acetate in basic conditions yields Strawberry Aldehyde.

Exact demand estimates are not available but it is expected that approximately 2 tonnes of this material would be required per annum. Currently bulk of the requirement is met by imports.

Acetophenone, Ethylchloroacetate, sodium metal, alcohol, benzene are the main items of raw materials required in the process. All these are indigenously available. The major items of equipment required are glass reflux unit with a heating mantel, S.S. Reaction vessel with internal cooling coil and agitator, cooling plant, Benzene extractor, separator (SS), Evaporator (SS), Storage tanks, vacuum units and pumps. All these can be easily fabricated. The RRL can give guarantee for about 50 to 60 per cent yield on the laboratory scale.

PRODUCTION OF EXTRA-FINE ZINC DUST

National Metallurgical Laboratory (NML), Jamshedpur, has developed the process know-how for the production of extra-fine zinc dust of 325 mesh and below.

The use of zinc dust is primarily in the Sodium hydrosulphite industry whose demand is expected to range between 5000 and 6000 tonnes annually in keeping with the installed capacity being set up. Other users are the pigments industry and the rayon industry who are likely to require the product up to 500 tonnes each annually. This indicates a large potential for the production of zinc dust indigenously. At present, the product is almost entirely imported.

The conversion of zinc metal into extra-fine zinc dust involves the melting and vaporization of the metal and finally condensing the zinc vapour using suitable media to yield dust of the desired metallic content and sieve analysis. A totally controlled atmosphere is required to be maintained. Appropriate dust collection systems have to be provided to entrain the fines as a measure of pollution control and maximising yield.

The zinc dust produced by the NML process know-how will generally conform to certain minimum specifications required for the hydrosulphite industry *viz*: sieve analysis - 75 microns (98 per cent max.) and 45 microns (90 per cent min.) and chemical analysis - metallic zinc (94 per cent minimum), total zinc (98 per cent), metallic lead (0.15 to 1 per cent), copper (0.01 per cent max.), arsenic (0.001 per cent max), Cl (0.05-0.15 per cent), Cd (0.01 - 0.2 per cent) and Fe (0.02 - 0.2 per cent).

Extra fine zinc dust may be prepared from pure zinc metal, spelter, or from wastes such as galvanizers' dross (hard zinc), zinc die-casting scrap, etc. The main items of equipment required consist of a melting unit, a vaporizing furnace, suitable condensation unit and an adequate system of dust collection. Ancillaries include handling equipment, blending and weighing units, suitable storage and packing systems etc. Instrumentation and controls covering temperature, flow and pressure will be necessary. Sieving and sieve analysis, along with proper quality control equipment, will also be required.

There are two possible alternate locations for zinc dust production facilities. The most advantageous would be captive units located at primary zinc metal producing plants. This would preclude all problems of raw materials supplies and also ease the problem of the availability of utilities, etc.

The other alternate location would be small scale industrial estates. Units so located would have to obtain their zinc metal supplies from appropriate sources. Alternately, such units can draw upon available supplies of metallic wastes such as galvanizer's dross or zinc die-casting scrap, the sources of which may be located nearby.

THERMAL INSULATING MATERIAL FROM VERMICULITE

Vermiculite, a naturally occuring mineral, when heated exfoliates several times its original volume yielding a lightweight material which has high thermal insulation and sound absorption properties. A fluidised bed furnace has been developed by the Central Building Research Institute (CBRI), Roorkee, for the manufacture of exfoliated vermiculite and the know-how is available with the National Research Development Corporation of India, 61, Ring Road, Lajpat Nagar III, New Delhi.

The main uses of the product are as a thermal insulating material either as such in the form of loose fill or as boards and blocks etc. prepared from it by incorporating suitable binders. It is also used for making hot face insulating refractory bricks which can stand temperatures of the order of 1000°C, as a lightweight aggregate for thermal insulating and acoustical plasters, as a fire proofing agent, as a material for electrical insulating paper, as a filler in paint and rubbers etc.

The demand of exfoliated vermiculite, if made available at reasonable rates, is bound to increase with the general growth of the industry and building construction.

The reserves of vermiculite are found in Andhra Pradesh, Tamil Nadu, Bihar, Madhya Pradesh, Mysore, Rajasthan and West Bengal. The furnace oil or light diesel oil which is used as a fuel is readily available in the market. The fluidised bed furnace can be used for vermiculite of any origin and the bulk density of the product depends on the variety of the raw material.

CBRI has designed and developed a furnace with a production capacity of 120 kg. per hour. The furnace has been successfully tried several times producing several tonnes of exfoliated vermiculite. The detailed design and engineering data of the fluidised bed furnace with a production capacity of about 860 tonnes per annum can be supplied by CBRI.

The yield of exfoliated vermiculite will be of the order of 90 per cent by weight of the initially dry raw vermiculite.

NEW PLANT BREEDING TECHNIQUE DEVELOPED

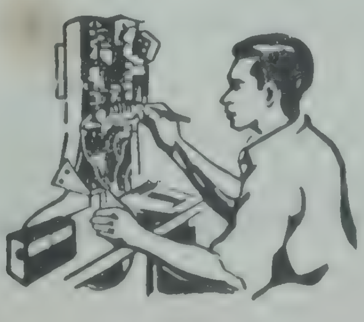
A new plant-breeding technique which could take years off the time required to produce new plant varieties has been developed by an Indian scientist working in the Grasslands Division of New Zealand's Department of Scientific and Industrial Research. This technique is likely to take only a couple of seasons to produce true breeding plant.

In the conventional plant breeding, several years of selection and in-breeding are required to achieve uniformity in a new variety. True purity of line has been possible only in self-fertilising species. Cross-fertilized species have always retained some variability of character, even though selection had limited it to acceptable levels.

The new technique, still in the experimental stage, involves manipulation of the chromosome number in plants to eliminate their genetic variability.

Flowering plants are diploids - they have two sets of chromosomes originating respectively in the male and female parts of the flower. These differ in their genetic patterns and on pairing, they can recombine to form new patterns. This is the principal mechanism of variation on plants.

Plants having only a single set of chromosomes-haploids-occur where an ovum or pollengrain grows into a plant without having united with its sexual opposite. They are always sterile because the chromosomes have no pairing sets.



EXPORT TRADE IN MACHINERY AND TRANSPORT EQUIPMENT

(In Million Rupees)

Items	1970-71	1971-72	1972-73	1971-72
			(April to December)	
Non-Electrical Machinery	**280.78**	**241.60**	**225.50**	**185.65**
Power Generating Machinery (Non-electric)	54.30	55.20	73.95	40.70
Textile and Leather Machinery	76.80	55.05	40.15	46.25
Machines for Special Industries	15.75	17.30	16.30	9.25
Metal Working Machinery	25.10	22.65	14.20	17.30
Office Machines	19.55	21.45	10.90	19.40
Agricultural Machinery and Implements	5.10	3.65	4.90	3.10
Other Machinery (Non-electric) and Machine Parts	84.15	66.20	65.10	49.10
Electrical Machinery, Apparatus and Appliances	**160.80**	**186.75**	**182.70**	**146.20**
Equipment for Distributing Electricity	35.65	54.00	56.10	44.30
Electrical Power Machinery and Switchgear	44.65	47.50	41.25	36.20
Telecommunication Apparatus	27.60	29.90	22.50	22.95
Domestic Electric Equipment	15.60	15.45	21.45	13.10
Electrical Apparatus for Medical Purposes and Radiological Apparatus	0.50	0.85	0.50	0.60
Other Electrical Machinary and Apparatus	37.35	39.00	40.90	29.00
Transport Equipment	**309.50**	**279.80**	**209.50**	**192.95**
Road Motor Vehicles	209.00	119.80	98.20	79.60
Road Vehicles other than Motor Vehicles	71.00	73.25	81.05	56.60
Railway Vehicles	28.15	69.40	28.50	56.00
Aircrafts	0.80	16.60	1.45	0.45
Ships and Boats	0.55	0.75	0.25	0.30
Total	**751.10**	**708.15**	**617.70**	**524.75**

Source : Directorate General of Commercial Intelligence and Statistics, Calcutta.

TRADE WITH EAST AFRICA

India's export trade to the African region totalled Rs. 1320 million during 1971-72. In the first three quarters of 1972-73, it was nearly Rs. 785 million. The value of Indian imports from Africa was Rs. 1437.65 million during 1971-72 while it was of the order of Rs. 1280.35 million in the first three quarters of 1972-73.

From the point of view of Indian exports, Sudan and the Arab Republic of Egypt constitute the most significant markets. The Sudanese purchases amounted to Rs. 517 million and those of ARE Rs. 230 million during 1971-72. In fact, the Egyptian market absorbed as much as Rs. 553 million worth of Indian goods during 1970-71. While these two markets together account for more than half of India's total export trade to the African region, the other important customers in Africa are Nigeria, Kenya, Zambia, Uganda, Tanzania, Dubai, Morocco, Libya, Mauritius, Tunisia, Sierra Leone, Swaziland, Somalia, Ghana and Ivory Coast.

From the point of view of Indian imports, the major sellers in Africa are A.R.E., Sudan, Zambia, Tanzania and Kenya.

In East Africa, Kenya happens to be the most important trading partner for India. India's share in Kenya's total import of U.S. $ 400 million in 1970, however, was a little over 2 per cent at U.S. $ 9 million. Indian exports to that country increased from Rs. 78.7 million in 1970-71 to Rs. 79 million in 1971-72. The major items of export from India to Kenya are iron and Steel, non-electrical machinery, metal manufactures, medicinal and pharmaceutical products, paper and paper board, cotton yarn and thread, films, made-up articles of cotton and cotton piecegoods. Principal imports from Kenya to India are raw cotton, raw cashew nuts, tanning extracts from vegetable oil and sisal fibre and its waste. The value of Indian imports from Kenya during 1971-72 were Rs. 177 million which was a sizeable increase compared to only Rs. 96.7 million in the preceding year and Rs. 45.9 million in 1969-70.

A recent study undertaken by the Indian Institute of Foreign Trade (New Delhi) on selected African countries revealed that the Kenyan market offers large potential for India's engineering products, chemicals and allied products, including basic chemicals, pharmaceuticals and plastics as well as textiles and related products. According to the study, India's export trade to Kenya could reach Rs. 106 million by the year 1973-74.

The question of finalization of Indo-Kenyan Trade Agreement has been under examination for several years now. The Kenyan side has been insisting on the insertion of M.F.N. (Most Favoured Nation) clause in the Trade Agreement. The Indian Government, however, feels that the MFN clause should not figure in the Agreement as it would lead to an explicit recognition of the reverse preferences granted by Kenya to the European Economic Community (EEC).

To forge closer relations among themselves, the three East African countries, namely, Kenya, Uganda and Tanzania have formed East African Community in 1967. The Community aims at a Common Customs Tariff, formation of a Development Bank, Common Market Council and decentralisation of common services. The Community entered into an Agreement with the European Economic Community and in terms of the Agreement the member countries of the East African Community have a virtually duty free market in EEC and in return African States give reverse tariff reference to EEC ranging from 2 per cent to 9 per cent on 58 products. Indeed, these reverse preferences are detrimental to Indian exports.

In the middle of 1970, the three East African countries imposed anti-dumping duty at the rate of 33⅓ per cent on iron and steel rods and bars when imported from India. The Indian Government have taken up with East African Governments to have a reconsideration in the matter.

A comparatively more developed country than the other East African nations, Kenya possesses expertise in the production of cement, soda ash, fertilizers and a number of consumer goods. The Government of Kenya encourages joint ventures to be set up by foreign parties provided they can save foreign exchange and are labour intensive. Five joint venture projects are already active in Kenya with Indian collaboration and they relate to textiles, gripe water, woollens, light engineering and corks. Recently another proposal for a joint venture for the production of pharmaceuticals has been sanctioned by the Indian Government.

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Next to Kenya, Tanzania is an important trading partner of India. The value of Indian exports to this country have been ranging from Rs. 41 million to Rs. 44 million in the last three years. During 1971-72 when the export was valued at Rs. 41.5 million, jute manufactures occupied the prime position. This product fetched Rs. 17.6 million in the year which was a substantial improvement compared only to Rs. 3.6 million in preceding year of 1970-71. Next to jute manufactures, iron and steel products earned Rs. 8 million while medicinal and pharmaceutical products were exported by India to the tune of Rs. 5.5 million, non-electrical machinery Rs. 2.1 million, electrical machinery and apparatus Rs. 1.7 million, transport equipment Rs. 1.5 million, metal manufactures Rs. 1.2 million and developed cinematographic films Rs. 1 million. From the view point of Indian imports from Tanzania, raw cashew nut occupies the leading position. Out of the total imports into India from Tanzania at Rs. 185 million in 1971-72, raw cashew nuts accounted for Rs. 120 million. Copper imports were of the order of Rs. 33 million and the import of raw cotton was at Rs. 15.5 million. Sisal fibre, wattle extract and pearls and precious stones were the other categories of import interest from Tanzania.

India has been having adverse balance of trade with this country. Preferential treatment is extended by India to imports from Tanzania, as a former British colony but Tanzania does not reciprocate the preferential treatment.

India's share in the imports of Tanzania is negligible. Being primarily a rural economy, Tanzania needs most of its requirements of manufactured and semi-manufactured goods from imports. India's capacity to export a wide range of machinery and technical know-how can be well-utilised by the Tanzanian economy for correcting the imbalance in mutual trade.

The third importart trading partner for India in the East African region is Uganda. Of the total Ugandan imports worth U.S. $ 121 million during 1970, India's share amounted to U.S. $ 5 million or a little over 4 per cent. Notwithstanding the increased exports in recent years, India has been having an unfavourable balance of trade with Uganda. For the first time in 1971-72, however, India had a favourable balance of trade. In this year, Indian exports were of the order of Rs. 45.2 million; her imports from that country stood at Rs. 29.5 million and the favourable balance of trade was Rs. 15.7 million.

The composition pattern of Indo-Ugandan trade would indicate that India mainly exports engineering goods, chemical products, cotton piecegoods and jute manufactures and imports raw cotton. During 1971-72, the share of engineering goods in the total export value to Uganda out of Rs. 25.5 million was of the order of Rs. 16.6 million. The export value of chemical products was Rs. 3.4 million, cotton piecegoods and manufactures Rs. 2.6 million and jute manufactures Rs. 1.4 million. Raw cotton imports in 1971-72 totalled Rs. 29.4 million out of a total import bill for the year from that country at Rs. 29.5 million.

India has a Trade Agreement with Uganda which was concluded in 1965. The Agreement is a general purpose one and does not include payment clause for balancing the trade between the two countries.

In all, India's trade potential with the East African Region may be termed bright notwithstanding the developments at political level. This is in view of fundamental competence of Indian products and the rising demand in East Africa for them. □

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ACSR CONDUCTORS TO PHILIPPINES

The National Electrification Administration in Philippines have recently placed two orders of a sizeable value of about Rs. 3.5 million on an Indian firm, M/s. Aluminium Industries Limited (Cochin), for the supply of ACSR conductors and accessories.

The firm has also received an order from Zambia for the export of ACSR conductors and from Sudan for the supply of P.V.C. aluminium cables. The Zambian order is worth Rs. 2.2 million while the Sudanese is Rs. 0.6 million.

The firm M/s. ALIND as is known for short, earned Rs. 3.6 million and Rs. 4 million respectively through their export trade in the years 1971-72 and 1972-73. In the current year, 1973-74, the firm hopes to touch the Rs. 10 million mark through their direct exports. Additionally, they are also executing an order for M/s. Kamani Engineering Works for the supply of ACSR conductors to Libya, at a cost of Rs. 8.5 million.

M/s. ALIND has completed 26 years of service to India's electrical industries. It has increased its aluminium conductor manufacturing capacity from an initial 1,500 tonnes to the present 18,000 tonnes a year. In its product range, the firm includes conductors and aluminium rods, ACSR (aluminium conductors steel reinforced) and AAC (all aluminium conductors), conductor accessories and tools, high tensile galvanised steel core wires, special steel wires, insulated aluminium cables and cables for underground power distribution. In addition to their manufacture of cables and wire products, the firm also produces wire drawing machines for ferrous and non-ferrous items, wire stranding machines (both tubular and planetary), laying-up machines, telephone cable assembling machines, caterpillar capstans, sector-shaping units and bunching machines. They also manufacture high voltage circuit breakers and instrument transformers.

Aside from manufacturing and supplying standard sizes of conductors, ALIND is equipped for designing special sizes of ACSR/AAC conductors and insulated cables for specific applications. Their Consultancy, Engineering and Export Division undertakes the designing and setting up of cable making units on a turnkey basis to customer's specifications. The firm's know-how developed over the last two decades and a half, through its experience in aluminium cable engineering is thus available to entrepreneurs in India and abroad.

The first-ever Indian export of cables is claimed to have been made by this company in 1962 when it shipped a consignment to Sri Lanka. Since then, the firm has exported its products to countries like Australia, Burma, Ethiopia, Iran, Iraq, Lebanon, Malaysia, Mauritius, Nepal, Nigeria, Peru, Saudi Arabia, Singapore, Sudan, Thailand, Trucial States, Arab Republic of Egypt, West Indies and Zambia. In 1971, ALIND executed a major contract for the export of ACSR conductors to the Soviet Union. Besides wires and cables, conductors and accessories, the firm exports wire making machinery also.

The firm has six plants in operation in the States of Kerala, Andhra Pradesh and Orissa. In Kerala, the company has set up its first plant at Kundara, the manufacturing activities at which place include ACSR/AAC; polythene, P.V.C. and insulated aluminium cables, SOLIDAL L. T. underground cables and conductor accessories. The third plant at Hirakud (Orissa) comprises a rolling mill and a wire mill equipped with high speed wire drawing and stranding machines. The plant at Hyderabad (Andhra Pradesh) supplements the company's production of aluminium cables and conductor accessories. Their another plant in Kerala at Mannar is equipped for the manufacture of a wide range of H. V. circuit breakers and current transformers.

The Government of India have recognised ALIND as an export house and it is claimed that this firm is the only such house in Kerala with an engineering bias.

India's total exports of cables and wires are estimated to have gone upto the level of Rs. 126 million in 1972-73 as compared to Rs. 112.5 million in 1971-72. The major items of export include insulated cables and wires, power aluminium conductors, power cable conductors and other types. The estimate of power aluminium conductors (ACSR) was of the order of Rs. 28 million during 1971-72 and Rs. 22.32 million in the first three quarters of 1972-73. In the earlier year, the Soviet Union absorbed these conductors worth Rs. 10.96 million. The purchases of another important market, Iran, totalled Rs. 12 million. Singapore and Yugoslavia were the next best customers. In the subsequent year, the import value of U.S.S.R. stood at Rs. 15.8 million while Iran purchased worth Rs. 3.7 million in the first three quarters (April-December 1972).

ACSR and AAC conductors are presently manufactured by two public sector undertakings in India and 38 private sector companies. Their licensed and installed capacity is of the order of 103,950 tonnes per annum. The estimated production in 1972 was about 81,560 tonnes.

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INDIAN TOYS TO U.S.A.

Though a new line of export, India-made toys and indoor games for children have come into prominence in the world markets recently. A wide variety including mechanical and metallic toys, plastic toys and rubber toys is currently active on India's export front. They have earned Rs. 2.6 million in the first three quarters of 1972-73. Plastic toys, for instance, fetched Rs. 0.4 million during 1971-72. Rubber toys earned Rs. 0.9 million.

The major markets for mechanical toys are U. K., U.S.A. and Sudan. Plastic toys are mainly imported by Sudan, Hong Kong and Yemen Arab Republic. Customers for rubber toys are mainly Sudan and Nigeria. Playing cards which fetched Rs. 0.4 million during 1971-72 were mainly imported by Nepal, Sudan and Ivory coast.

Recently M/s. Dynamic Plastics Pvt. Ltd., Post Box No. 6854, Bombay, have successfully executed an export order for the supply of 40,000 pieces of their toy sets to the American market. This new order was valued at Rs. 113,500. It is claimed to be the first time that such supplies were made to U.S.A. by an Indian firm against competition by developed countries like Japan, German Federal Republic, France, U. K., and Italy that are manufacturing highly sophisticated toys with ever fresh range and novelty of ideas.

The firm is one of the leading manufacturers of plastic educational toys and games in India with an established domestic market catering to the tastes of all age-groups of children. They have already succeeded in exporting their wares to Australia, West Asia and West European markets.

Having already made a breakthrough, the firm hopes to make a further dent on the U.S. market where toy manufacture is one of the top ranking industries running into business worth $ 3.5 billion per year.

AGARBATTIS TO WORLD MARKETS

India-manufactured agarbattis (incense-sticks) are in widespread demand abroad. The exports of agarbattis are witnessing uptrend from year to year – Rs. 10 million in 1969-70, Rs. 12.75 million in 1970-71 and Rs. 14.10 million in 1971-72. During the first nine months of 1972-73 (April-December), the export value was of the order of Rs. 12.50 million.

U.S.A., Ethiopia, Nigeria, Singapore, Nepal, Malaysia, Kenya, Liberia Canary Islands, France, Canada, Netherlands and Arab Republic of Egypt are the prominent importing countries.

M/s. B.V. Aswathiah Brothers, 193, Nagarajpeth, Bangalore-2, one of the manufacturers and exporters of agarbattis in the Southern region exported worth Rs. 1.22 million in 1971-72, The export destinations of the firm included Nigeria, Spain, South America, Yemen Arab Republic, Zambia, Sudan, Ethiopia, Kenya, U.K., U.S.A., Fiji Islands, Canada, Singapore, Uganda, Federal Republic of Germany, Malaysia, Thailand, Japan and Iraq.

The firm's 'Nandi' brand agarbattis earned good name in the overseas markets mentioned above. Japan and countries in West Europe are in the customer list of the firm. Of the firm's annual turnover of Rs. 4.5 million, about 33 per cent is marketed abroad. It has been awarded several top State Awards as also the National Award by way of recognition of their export achievements.

KENDU LEAVES EARN FOREIGN EXCHANGE

Besides wood, several other forest products are emerging as sizeable sources of foreign exchange earning in recent years. Even kendu leaves, used in bidi making have come to contribute sizeably to the country's export trade.

Recently, an export contract valued at Rs. 12 million has been secured by the Orissa Forest Corporation (OFC) for the supply of 3.5 million kilograms of kendu leaves to Sri Lanka Tobacco Industries Corporation, a public sector undertaking in that country. The execution of the contract is to be made during the period September 1973 to August 1974, according to the terms of the agreement.

Interestingly, the agreement concluded recently is the third in the series concluded during the last three years by OFC with the Sri Lanka Corporation. Under the preceding two agreements, OFC had shipped about 3.5 million kilograms of kendu leaves to its counterpart in Sri Lanka during 1971-72 and 1972-73. There is a possibility that OFC may receive some export orders for Kendu leaves from Nepal and Bangladesh in the near future.

Among India's exports of forest products wood constitutes a major item. The foreign exchange earning from wood exports witnessed consistent uptrend in recent years - Rs. 44.30 million in 1968-69, Rs. 68.30 million in 1969-70, Rs. 59.40 million in 1970-71 and Rs. 69.15 million in 1971-72. During the first nine months of 1972-73 (April-December 1972), the exports reached a peak level at a value of Rs. 80.70 million.

Japan is the largest buyer of Indian wood, followed by Italy, Federal Republic of Germany, Denmark, Hong Kong and Sudan.

EXPORT SUCCESS OF A GUJARAT FIRM

The success story of M/s. Ahmedabad Manufacturing and Calico Printing Company, Ahmedabad, popularly known as 'Calico', pertains to its progressive diversification in its product range and sizeable volume of exports. The firm having three manufacturing divisions–textiles, chemicals and plastics, exported its products at a level of Rs. 49.3 million in 1972-73, registering a sharp rise of Rs. 10 million over the export performance at Rs. 39.2 million during the preceding year.

In the textile sector, the firm's range of products includes cloth, towels, blankets, sewing thread and mosquito nettings. The installed capacity of 0.21 million spindles includes doubling spindles and about 3000 looms. It is fully equipped with a modern processing plant for bleaching, dyeing, printing, screen printing, mercerising, sanforising and special finishes.

In the area of chemical manufacture, M/s. Calico's range covers caustic soda, liquid chlorine, hydrochloric acid, calcium carbide and chlorinated solvents. It has been licensed to produce caustic soda amounting to 14,800 tonnes per annum while its installed capaci ty for calcium carbide is of the order of 14,400 tonnes. Besides, for chlorinated solvents the installed capacity is about 5300 tonnes.

The firm's plastic division is engaged in the manufacture of PVC resin, PVC compound; printed, embossed and laminated plastic sheets of polyvinyl chloride for rain coats, curtains, bags, gift articles, PVC insulated cables, PVC pipes (bold and soft), PVC profiles of different shapes, PVC blown films, PVC injection moulding and PVA. The total installed capacity for these products is of the order of 3600 tonnes per annum while for PVA it is placed at 1200 tonnes per annum.

During 1972-73, the firm's PVC polymerisation and additional units of the PVC compounding and processing plants which includes foam leather plant (Bombay) were commissioned. Its polyester fibre plant, currently under installation at Baroda (Gujarat), is expected to go on production stream at the end of the first quarter of 1974.

India's exports of cotton manufactures (excluding yarn, thread and clothing) amounted to Rs. 1000.5 million in 1971-72. In the first nine months of 1972-73 (April-December 1972), these earned Rs. 914.30 million. USA, UK, USSR, Federal Republic of Germany, Japan, Bangladesh, Dahomey Republic, Sierra Leone, Sweden, Tanzania Republic, Nepal and France were the prominent buyers.

In the area of chemical elements and compounds, India's total exports during 1971-72 totalled Rs. 72.32 million while during the first three quarters of 1972-73 they fetched Rs. 63 million. USSR, Italy, USA, Abu Dhabi, Saudi Arabia, Thailand, UK, Netherlands, Bangladesh, Belgium, Congo Republic and Arab Republic of Egypt were the leading markets.

India's export trade in plastics and linoleums during 1971-72 was of the order of Rs. 63 million, The exports rose to Rs. 84.30 million during 1972-73.

WELDED WIRE FABRICS EARN MORE FOREIGN EXCHANGE

India supplies a wide variety of wire products to markets overseas. The export range includes wire cloth and wire mesh, wire gauze and nettings of iron and steel. Recent years have witnessed the addition of one more product - welded wire fabrics - to the export range. The fabrics are suitable for the reinforcement of cement concrete in building construction. Despite the fact that they are a recent entrant in the export field, they are bringing in a sizeable amount of foreign exchange every year.

A manufacturing firm in Maharashtra, M/s. Multi-Weld Wire Company Private Ltd., Bombay has to its credit export turnover amounting to over Rs. 10 million through its overseas supply of the product. The customers of the firm include several countries in West Asia and Africa. The firm has on hand export orders amounting to more than Rs. 10 million and these are expected to be executed within a couple of years.

SIZEABLE ORDERS FOR TELEPHONE EQUIPMENT

Indian Telephone Industries Limited (ITI), Bangalore have export orders on hand worth Rs. 16.5 million for execution during the current year 1973-74 and the subsequent year. These include the turnkey contract bagged by it from Jordan for the supply, installation and commissioning of a 1,000 line automatic telephone exchange. This Rs. 2 million worth of contract was won by the firm against keen global competition from reputable suppliers in the line abroad. Besides, the ITI was also selected by the Government of Jordan for expanding the trunk automatic exchange facilities in Amman, the Capital City. Further the Bangalore firm has to its credit winning repeat orders worth Rs. 6.5 million for supply and installation of 11 automatic exchange extensions in East Africa including those in Dar-es Salaam and Nairobi.

The Company is anticipating export realisation of Rs. 5 2 million for the current year. During 1972-73, the actual value of their exports was over Rs. 4.10 million as against Rs. 3.2 million in 1971-72.

In the first quarter of 1973-74 (April-June, 1973), ITI has effected exports to the tune of Rs. 0.33 million. In this quarter, they have supplied transmission telecommunication equipment consisting of line transformers as well as telephone spares to Arab Republic of Egypt; auto desk telephones and uniselectors to Australia; strip connections, relay spring sets and telephone spares to Singapore; telephone exchange equipment, marginal resistance boxes and strip connections to Tanzania and magneto desk telephones to Zambia. They have also supplied telephone exchange spares to Sri Lanka and Malaysia and auto desk telephones to Bhutan and Nepal.

In the first quarter of the current year, the value of ITI's production was of the order of Rs. 46 million.

The first enterprise in India's public sector, ITI has completed 25 years of successful operation. Its equipment has woven an intricate pattern of telecommunications network not only within the country but overseas. Some of the major categories of equipment manufactured by the firm include telephone instruments, strowger and cross-bar exchanges, long-distance transmission equipment for open wire lines, co-axial and microwave communications and equipment for satellite communication.

With an annual turnover that has already crossed—Rs. 380 million, ITI's total turnover so far exceeded Rs. 2500 million. It has exported its equipment to over 45 countries abroad including U.K. and Australia. Keeping pace with the latest technological developments, the company has developed quite a few products through its research work. Some of the items developed by ITI include multiplexing equipment, microwave equipment for satellite earth stations, that make long distance communications possible, specialized equipment for railways and Defence and the latest electronic exchange. In 1972-73, ITI's total production included 265,255 instruments of all kinds, 128,000 lines of strowger exchange equipment, 95,000 lines of cross-bar exchange equipment and transmission equipment. It was valued at Rs. 79 million. To meet increasing demand both, at home and abroad for telecommunication equipment, ITI has established two more units at Naini near Allahabad and the other in Kashmir which have recently gone into production; two more units are under way at Rae Bareilly (U.P.) and in Kerala. Of these, the installed capacity of the unit at Naini is of the order of 0.5 million numbers of telephones while the Rae Bareilly plant's capacity has been estimated at 300,000 lines of exchange equipment. ITI's plant, proposed to be located at Palghat in Kerala, is expected to be equipped with the most modern electronic telephone exchange equipment developed by itself.

ROLLS FOR BANGLADESH STEEL MILLS

Indian industry has built capability for the export of rolls and even rolling mills.

M/s. Tata Exports Limited, Shivsagar Estate, Annie Basant Road, Bombay have recently exported sophisticated Rolls for Steel Mills in Bangladesh. These rolls, each weighing approximately eight tonnes were manufactured by M/s. Tata Yodogawa Limited who are prominent manufacturers of rolls in India. This order was secured against international competition and is approximately valued at Rs. one million.

The company has a record of exporting various other equipment to steel Mills abroad. They had supplied rolls to Yugoslavia earlier.

EXPORT PERFORMANCE AND POTENTIAL

INDO-IRAQ ECONOMIC COOPERATION AGREEMENT

With the recent exchange of letters of ratification between the representatives of the two countries, the economic and technical cooperation agreement between India and Iraq has come into force.

Under this Agreement, India will supply goods and services to a number of development projects in Iraq like the Baghdad-Ramadi – Al Qain Railway Project and Steel rolling mills; provide electric power transmission facility, ship building and repair facilities, supply iron ore for Iraqi steel project, cotton, woollen and sugar manufacturing mills, power transmission and distribution equipment, mills for manufacture of light engineering goods, wire and cable factory, aluminium project, fertilizer project, storage tanks, pipelines and equipment for petroleum and chemical industries and equipment and machinery for fertilizers and natural gas plants.

Iraq, in turn, will supply crude oil to India under bilateral trading arrangements, on a balancing basis as far as possible. The agreement will open up new possibilities of export of Indian goods to Iraq and make available much-needed crude oil to India.

India's exports to Iraq amounted to Rs. 97.10 million in 1971-72 as against Rs. 90.40 million in the preceding year. During the first nine-months of 1972-73 (April-December 1972), the exports totalled Rs. 85.81 million.

In the field of imports, Indian purchases from Iraq were valued at Rs. 35.65 million in 1971-72 while in the first quarters of 1972-73 (April-December, 1972), these were of the order of Rs. 25.65 million.

EXPORT PROSPECTS OF INDIAN TEXTILES

The textile industry contributes a major segment of India's export trade. The cotton textiles, silk products and woollen textiles have all been witnessing interesting improvements in their export endeavour.

The cotton textile industry has earned about Rs. 1580 million in 1972-73. Its export value was of the order of Rs. 1151 million in 1971-72 and Rs. 975 million in 1968-69. To place the cotton textile industry on firm footing in the context of export trade, special strategies were devised from time to time. The industry is currently implementing a voluntary obligation to export 15 per cent of its production. An exceptionally good cotton crop and favourable prices of cotton have helped the industry to achieve the export performance in 1972-73. In conformity with world trends, efforts have been made to achieve a sizeable increase in the proportion of processed goods in the total exports. The Cotton Conversion Deal with USSR was a unique example of cooperation in the field of production and trade. The Deal envisaged import of 20,000 tonnes of Russian cotton and exports of 126 million metres of cloth and 5 million pieces of towels to that country. The Conversion charges payable under the Deal amounted to Rs. 166 million. Special emphasis has also been laid on maximising exports to quota countries, namely, U.S.A., U.K. and EEC. During 1972, India exported 140 million square yards to U.K. against a quota of 207 million square yards. The U.S.A. quota was fulfilled. The achivement in respect of EEC quota was 4289 tonnes as against 11,500 tonnes for the period October 1971 to September 1972. The overall export performance for 1972 was at Rs. 1580 million against the target of Rs. 1332 million set for the year. During 1973-74, the textile export in the period from April–May 1973 was placed at Rs. 272 million. For the entire year of 1973-74 the export target has been placed at Rs. 1750 million. The industry is hopeful of achieving the target.

The Government of India have recently taken certain decisions to strengthen export production capability of the cotton textile industry. The installation of 18,000 automatic looms and 2.5 million spindles was programmed for the Fourth Five-Year Plan period. Emphasis has also been laid on the installation of wide width looms, terry towel looms and corduroy looms as these generate the exportable fabrics. The import and installation of any type of loom is permitted for priority exporting firms without any export obligation while preference is being shown for import and installation of wide-width looms, shuttleless looms, corduroy looms, terry towel looms and looms for production of industrial cloth like canvas. Non-priority exporting mills would also be permitted to import and install the aforementioned types of automatic looms under export obligation. It is expected that nearly one-third of new weaving capacity to be established in the Fifth Plan period would be earmarked for export promotion. It is also estimated that export of cotton cloth would go up from 630 million metres to 1460 million metres by 1978-79.

In respect of silk goods, the export value reached a peak at Rs. 174 million in 1969-70 due to tremendous increase in world demand for Indian scarves and stoles, particularly in the U.S. markets. The years that followed witnessed a slow down in the exports, mainly because of changing fashion trends. To ensure good quality supply vis-a-vis the products of the world competitors, the Government of India have introduced strict quality control measures in respect of mulberry silk scarves, stoles and ties. Floor prices have also been fixed for these items to prevent export of sub-standard materials. The export value of silk goods in 1972-73 was of the order of Rs. 83 million which was an impovement over Rs. 72 million earned in the preceding year. Western Europe which has been the biggest market for Indian silk goods, absorbed Rs. 46 million worth of these products in the year. The Asian, American and Oceanian markets were the next best buyers.

Art silk fabrics constitute another important area of export promotion in the textile group. The target for the export of art silk fabrics for the year 1973-74 has been placed at Rs. 55 million while for other products, namely, hosiery, knitwear and looms and made-ups, the target for that year has been placed at Rs. 25 million. While the art silk industry is confident of achieving the target, about 80 per cent of the targetted value has already been covered on the basis of firm contracts in hand. Actual export value of artsilk fabrics during 1971-72 was Rs. 75 million against Rs. 83 million in the previous year. In the first three quarters of 1972-73, the value was Rs. 73 million as compared to Rs. 59 million in the same period of the year that preceded. The art-silk industry is confident of achieving the export target of Rs. 60 million by the end of Fifth Five Year Plan (1978-79) in view of the brisk world trade for the fabrics which is over 5000 million metres per annum. Also advanced manufacturing countries have withdrawn from certain areas of production due to higher labour cost and pollution problems. Another tendency has been that some of the advanced producing countries are now importing art silk goods in semi-finished state for further finishing for their own consumption and re-export. This would help improve Indian export supplies abroad. Further, a wide base of raw material production, fabrics production and conversion into finished products available in India provides scope for large scale expansion of the present negligible Indian share in the world trade.

In the woollen textiles sector, the products exported presently include raw wool, woollen fabrics, woollen hosiery, carpets, shawls, lohis and blankets. Against an export target of Rs. 400 million, actual exports during 1972-73 were about Rs. 480 million. The two major export items are woollen hosiery (Rs. 168 million) and carpets, druggets and numdahs (Rs. 213 million). The principal buyers of hosiery are in the East European region. The carpets group is mainly supplied to Canada, U.S.A., Australia and other European countries including East Europe.

The export target for the woollen textiles for the years 1973-74 and 1978-79 have been placed at Rs. 530 million and Rs. 1250 million respectively.

MORE FOREIGN EXCHANGE FROM PLASTICS

India's export trade in plastics and linoleums has registered a sizeable improvement during 1972-73 at Rs. 84.35 million against Rs. 63 million in the preceding year. The share of plastics rose from Rs. 48.65 million to Rs. 70 million while that of linoleums was maintained at Rs. 14.3 million.

In the plastics group, the foremost category of export dynamism was that of plastic moulded and extruded goods. This group increased its offtake from Rs. 9.20 million in 1971-72 to Rs. 19.8 million in the subsequent year. Spectacle frames constituted the next best item at Rs. 15.3 million in 1972-73 as compared to Rs. 4.2 million in the year before. The category of polyethylene film sheets and bags also recorded sizeable rise at Rs. 5.2 million as against nearly Rs. 1 million in the previous year. The export trade in plastic imitation jewellery has increased from Rs. 4.2 million to Rs. 5.3 million. Plastic electrical accessories also registered uptrend at the level of Rs. 4.15 million from Rs. 3 million. Laminates constituted yet another group whose offtake rose substantially from about Rs. 0.7 million to Rs. 1.9 million. The export trade in PVC pipes and conduits witnessed a rise of over four-fold increase from Rs. 0.45 million to Rs. 1.9 million.

Several plastic items for which there was no export at all in 1971-72 have earned sizeable sums of foreign exchange in the year that followed. Examples are P.V.C. leather cloth and plastic brushes, polyurethane foam and its products and nitro cellulose cloth.

There was a decline, however, in respect of some of the plastic products like fountain pens and ball point pens, plastic bangles, handbags and other PVC fabricated goods, foam leather cloth and sheeting and P.V.C. sheets. The group of fountain pens earned less at Rs. 2.3 million as against Rs. 3.3 million while plastic bangles fetched Rs. 4.5 million as compared to Rs. 4.7 million. Foam leather cloth and sheeting secured only Rs. 0.9 million as against Rs. 11.40 million. Handbags and other PVC fabricated goods have also recorded decline from Rs. 1.7 million to Rs. 1.0 million.

In the section of linoleums, jute and felt-based linoleums fetched Rs. 9.5 million as against Rs. 7.1 million. Polylined jute material brought in Rs. 4.6 million as against Rs. 5.3 million. The other items exported in the linoleum group are general purpose polystyrene, PVC compound, phenol formaldehyde moulding powder and urea formaldehyde moulding power. The export traget for plastics and linoleums for the year 1972-73 was set at Rs. 100 million while the actual realisation was of the order of Rs. 84.3 million. However, the performance for the year is to be considered creditable as it has brought in an additionality of Rs. 21 million compared to the previous year.

SOVIET UNION BEST MARKET FOR VARNISHES

Indian exports of pigments, varnishes and related materials are looking up in the export markets. Their exports totalled Rs. 28.46 million during 1971-72 but in the first three quarters of the subsequent year they rose to the level of Rs. 35.80 million.

The Soviet Union was mainly responsible for the increased offtake. Its purchases rose from Rs. 18 million in 1971-72 to Rs. 23 million in the first three quarters of the subsequent year.

Varnishes constitute the major area where the Soviet Union's demand has improved. Of the total export trade for this group at Rs. 9.50 million in 1971-72, U.S.S.R.'s share was Rs. 8.83 million. In the first nine months of 1972-73, varnish exports were Rs. 11 million of which U.S S.R. absorbed worth Rs. 10.4 million. Similarly, synthetic enamel exports were of the order of Rs. 8.30 million in 1971-72 of which the Soviet Union imports were valued at Rs. 6.8 million. In the period under review in the following year, the enamel exports totalled Rs. 10.92 million and the Soviet Union imported worth Rs. 9.2 million.

Colouring materials including iron blues, ultra marine blue and chrome pigments were exported to the tune of Rs. 2.5 million in 1971-72 and Rs. 1.20 million in the first three quarters of 1972-73. For ultra marine blue, the major markets are Vietnam Republic and Ghana. Soviet Union is again the leading purchaser of chrome pigments.

Apart from synthetic enamels and varnishes, the other varieties exported in the group of prepared paints, enamels and varnishes are organic dye stuff pigments, inorganic pigments, readymixed paints and artist's colours.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

TOWARDS SELF-SUFFICIENCY IN ALUMINIUM

The Indian economy is hopeful of achieving self-sufficiency in aluminium in a year's time. During the Fifth Five-Year Plan period ending 1978-79, the country expects to earn valuable foreign exchange through the export of this metal. With a view to achieve this objective, new plants are being constructed and the capacity of existing ones is expanded both, in the public and private sectors.

India produces currently about 180,000 tonnes of aluminium which is almost adequate to meet the domestic demand. The installed production capacity is 194,850 tonnes per annum. The estimated demand for alumina for the years 1973-74 and 1974-75 has been placed at 230,000 tonnes and 260,000 tonnes respectively. The anticipated production for these years is 234,000 tonnes and 279,000 tonnes.

To meet the growing demand for the metal in the coming five to six years, the additional capacity of 235,000 tonnes a year has been licensed to be set up during the Fourth and Fifth plans. Of this capacity, 150,000 tonnes will be in the public sector. The production by 1978-79 is to be of the order of 394,000 tonnes leaving a surplus of 4,000 tonnes. The Bharat Aluminium Company's Korba Aluminium Complex is expected to reach its maximum rated capacity by that time.

The first stream of the 200,000 tonnes a year, Korba alumina plant was commissioned in April this year. The smelter which is to have an ultimate production capacity of 100,000 tonnes of aluminium per annum is expected to come into production in phases by the end of 1974.

Detailed project reports for the smelter, alumina plant and the mining establishment of the Ratnagiri project (Maharashtra) have already been prepared. This project which is to produce 50,000 tonnes of aluminium a year is likely to go into production in 1978.

PRODUCTION TRENDS IN INSTRUMENTATION UNITS

The production value of the wide range of instruments manufactured by M/s. National Instrument Ltd., Jadavpur (Calcutta) in the public sector rose by Rs. 4.25 million to Rs. 10.77 million in 1971-72 compared to Rs. 6.52 million in 1970-71. It was merely Rs. 4.14 million in 1969-70.

The increase in production in 1971-72 was marked almost in all categories of instruments manufactured at the Jadavpur Plant. This was particularly noticeable in respect of 'Dumpy Level'. Its production reached a level of Rs. 2.68 million against Rs. 1.39 million and Rs. 0.65 million in the preceding two years. 'Transit Theodolite's production registered nearly a threefold improvement at Rs. 1.14 million compared to Rs. 0.47 million in 1969-70. Pressure and vacuum garages attained a production level of Rs. 2.39 million in comparison to Rs. 1.44 million in 1970-71 and Rs. 1 million in 1969-70.

Production rise is noticeable in respect of other instruments produced by the Jadavpur plant, such as 'level engineers' and optic theodolite. Infra Red Night vision sighting equipment (truncated) and Direct Reading Optical Measuring Instruments which had no production during 1969-70 and 1970-71 were also manufactured in 1971-72, though their production value was limited to only Rs. 1 million and Rs. 0.20 million respectively. Among the other items produced by the plant are binoculars and profile projectors.

Alongside the increase in production, the Jadavpur Instrument Plant has made progress in the implementation of its diversification and expansion schemes.

The scheme for establishing bulk manufacturing facilities for infra-red night vision sighting equipment involving a capital outlay of Rs. 3.25 million, for instance, has made steady headway. A scheme for the augmentation of production capacity of Six Seconds Optic Theodolite from the present level of 10 nos. per month to 30 nos. per month involving a capital outlay of Rs. 988,000, sanctioned by the Government in June, 1971 is also under implementation.

As a part of updating their traditional surveying Instruments, the Plant has successfully developed an updated, compact and light model of Dumpy Level. This new model has been trial-tested by the Company's important prospective customers who have accepted it as an improved version of the older model and substantial orders for this new Dumpy Level are expected in due course.

The production value of M/s. Instrumentation Ltd., Kota, yet another public sector unit engaged in the manufacture of sophisticated instruments rose from Rs. 4.4 million in 1968-69 to the extent of about Rs. 44 million in 1971-72. In this year, the Kota unit added 9 major types of instruments with about 80 variants, while it started with only three major types with 14 variants. The new range added includes the pneumatic instruments which is to cater to the needs of chemical plants.

Besides improving its production, the Kota Instrumentation unit has made considerable contribution towards self-reliance and import substitution. By developing a technical base embracing systems engineering, installation and commissioning, tool and product design, research and development, standardisation and unification, the Company has already saved many a million rupees in foreign exchange.

The company is, in fact, in a position to offer systems engineering and technical services in foreign markets. The import content in the production value of the Kota unit which was 24 per cent is expected to have reduced to about 16 – 18 per cent by now; it is to further go down to about 14 per cent in 1973-74. In its endeavour in the research and development fields, the Kota unit is to collaborate with National Laboratories and Institutions in India. This is intended to keep abreast of developments to meet the customer requirements.

HIGH VOLTAGE TOWER FABRICATED

The first ever 400 kv. tower, designed and fabricated in India by M/s. Kamani Engineering Corporation Limited, Bombay has been recently tested at their Johotwara factory. Hitherto, towers upto 200 kv. only were manufactured.

The 33-metre high horizontal configuaration tower comprises 592 members (pieces) with a bare width of 8 metres. The width at the level of conductors is 23 metres. The tower has been designed to take load in all the directions because of heavy wind pressure of 150 kgs. a metre square, tension in cables and various vertical loads. Its designing has been done in such a way that it can double the actual load under normal conditions and one and half times the actual load in the unlikely condition of snapped conductors.

The Corporation has to its credit the manufacture of 400,000 tonnes of transmission towers and erection of 11,000 kilometres of transmission lines. It has a proven capability to undertake turnkey jobs abroad in the field.

The organised sector of India's transmission towers industry has 18 units in its infrastructure with a combined total installed capacity of 95,100 tonnes. During 1972, the production was of the order of 60,000 tonnes as against 57,770 tonnes in the preceding year.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

LAXATIVES FROM SENNA LEAVES

India has a rich crop of senna (Sonamukhi). The country exports a good quantity of Senna leaves and pods. In 1971-72, for instance, the exports totalled Rs. 5.3 million. Hungary was the best market for having purchased the product worth Rs. 1.43 million. Czechoslovakia bought nearly worth Rs. 1 million. Among other importers were France, Belgium, German Federal Republic, Japan, Italy, U.S.A., U.K. Netherlands, Switzerland and Argentina. These countries mainly imported the material for use in the pharmaceutical industry.

The pharmaceutical industry needs calcium sennasides for the preparation of laxatives which are considered to be safe and effective. India's drug industry is, however, importing its requirements of the active principles for the manufacture of laxatives. The Regional Research Laboratory, Jammu, has recently developed a process for the preparation of the active principles of senna from the indigenously available senna leaves.

A senna leaves are powdered and sieved and then extracted with suitable solvents. They are subsequently treated with a mineral or an organic acid to liberate sennasides. The solution is then filtered. The calcium salt of sennasides is precipitated.

A recovery of about 60 per cent of the active principles has been reported from the Research Laboratory.

For further details may be contacted the National Research Development Corporation (India), 61, Ring Road, Lajpat Nagar 3, New Delhi.

WHITE OIL FROM CRUDE

The Indian Institute of Petroleum, Dehradun (U.P) has recently developed a new process for the manufacture of white oils from lubricating oil fractions of all types of crudes. The white oils that can be manufactured through the process developed are in two grades, namely, the pharmaceutical grade which is utilised for human internal use (generally referred to as liquid paraffin) and the technical grade. The basic starting material for the white oil manufacture - petroleum oil - is available indigenously. The refining material used in the process, oleum and bleaching clay are also available indigenously.

So far, in India the white oil industry is in infant stage. For the first time a reasonably large plant for the production of about 10,000 tonnes per year of white oil has been set up by M/s. Nagpal Ambadi Petro-chem Refining Ltd., Madras. Nonetheless, the domestic demand being what it is, there is a large gap of production and requirement still unmet and hence the importance of the new process developed by the Dehradun Institute. Further, the import of petroleum jelly has been banned by the Indian Government and jelly is manufactured from micro-crystalline wax by mixing with about 90 per cent of white oil. This development also indicates the vast scope for white oil manufacture in India. Finding application in a wide range of industries including petroleum jelly manufacture, for pharmaceutical and cosmetic industries, food processing, hair preparations, baby oils, leather and electrical industries and plastic manufacture.

The white oil production through the process developed by the Petroleum Institute is reported to be an easy possibility as most of the machinery and plant components can be fabricated within India and no foreign exchange outgo is involved. Interested parties desirous of knowing the details of the process developed for the white oil manufacture may contact the National Research and Development Corporation of India, 61, Ring Road, New Delhi.

WOOD WOOL BOARDS MANUFACTURED INDIGENOUSLY

Wood wool is used in buildings as a cladding material for walls and roofs, in partitions, and on ceilings. This is a material made from wood fibre and portland cement. Due to its medium density and open texture, the material is mainly used as a thermal and acoustic insulation material. The material is fire resistant. Its surface can be plastered as also coating materials including bitumen can be applied over it.

The Central Building Research Institute, Roorkee have invented a process for the manufacture of wood wool boards. The Institute has worked out a simple method for manufacturing cement bonded wood wool boards by totally eliminating the use of heavy press.

India is currently importing the equipment for the manufacture of wood wool boards consisting mainly of the wood wool making machine and the press for casting the wood wool mix. The process developed by the Roorkee Institute will not only help save foreign exchange drain on this account but can also leave scope for exporting the equipment particularly to West and South East Asian markets.

COMPOSITION OF INDIA'S ENGINEERING EXPORTS

(In Million Rupees)

Items	**1971-72**	**1972-73**
Automobile & Auto Parts	151.40	172.00
Steel Structural Fabricated Incl. P.S. Tanks	24.50	132.20
Electric Wires & Cables	112.55	126.00
Bicycle and Parts	80.45	103.00
M. S. Pipes, Tubes & Fittings	74.10	91.60
Hand Tools & Small Tools	61.00	76.45
Diesel Engines and Parts	33.00	52.15
Transmission Line Towers & Poles	37.60	48.80
Iron & Steel Castings (All Sorts)	43.20	47.65
Electric Motors, Switchgear, Transformers etc.	50.70	46.55
Jute, Textile & Knitting Machinery	59.60	46.00
Railway Coaches and Wagons	65.65	41.00
Industrial Machinery & others Incl. Boilers	21.90	37.75
Batteries Dry & Storage	25.85	29.10
Cement and Asbestos Cement Plant & Mill Machinery Incl. Concrete Vibrators	9.50	27.00
Electric Fans and Parts	15.65	25.00
Wire Ropes & other Products	26.45	24.50
Radios and Components	22.30	23.00
E.P.N.S. Ware	12.35	22.40
Machine Tools	30.45	21.30
Office Machinery (DATA Processing Machine etc.)	22.30	18.55
Builders' Hardware Incl. Locks & Padlocks	13.50	17.05
Electrical Accessories & Appliances	11.60	16.90
Brass, Copper Sheets, Circles, Rods and Tubes	13.45	12.45
Water and Sanitary Fittings	7.45	12.10
Sugar Mill Machinery	11.06	11.80
Oil Lamps & Stoves (Pressure & Non Pressure)	8.45	11.50
Scientific & Surgical Instruments	9.30	10.85
Bright Steel Bars & Shaftings	8.50	10.65
Airconditioners, Refrigerators, Water Coolers and Ice Machinery	8.50	10.10
Railway Track Materials	13.50	8.75
Aluminium Utensils & Capsules	6.55	7.55
Mechanical Pumps	7.40	7.30
Steel Furniture	7.20	7.20
Hoisting & Lifting Machines Inc. Cranes	4.15	7.15
Agricultural Implements & Machinery	4.90	6.70
Electric Lamps & Flourescent Tubes etc.	3.95	6.50
Electrodes & Welding Equipments	4.35	6.00
Bolts, Nuts, Rivets & Washers	6.45	5.85
Stainless Steel Utensils	3.45	5.80
Sewing Machines & Parts	5.50	5.15
Air Compressors	4.50	4.70
Aluminium Sheets, Circles & Foils	5.30	4.60
Fire Arms of Sports	5.60	4.15
Brass & Copper Utensils	2.95	3.85
Tin Plate Containers	4.45	3.70
Telephone & Telegraphic Equipment Including Teleprinter	3.80	3.70
Cutlery (Table Ware)	2.60	3.55
Oil Mill Machinery	3.45	3.50
Steel Ghamellas & other Steel Utensils	2.45	3.40
Total including other Items	**1260.45**	**1502.40**

Source : Estimates of the Engineering Export Promotion Council, Calcutta.

PROGRESS IN IMPORT SUBSTITUTION

The Indian industry and the Government alike have been pursuing a keen policy of import substitution with a view not only to save the outgo of foreign exchange resources but to promote indigenous talent for the development and diversification of the country's manufacturing sector. Some of the measures adopted in this context relate to the substitution of imported materials, components and spare parts with indigenously manufactured materials of either the same or comparable specifications; reduction in the consumption of imported raw materials per unit of production; change-over of production of chemicals and chemical products from intermediates to their production from basic raw materials; substitution of imported raw materials by suitable alternatives with consequent changes in the specification of the end-products and acceleration of the phased manufacturing programmes to achieve greater indigenous content in the shortest possible time.

The Directorate General of Technical Development (DGTD) in the Ministry of Industrial Development have recently undertaken a study on the subject of import substitution for the period covering 1971 and 1972. They have evaluated the results in two broad categories, namely (a) reduction in the allocation of foreign exchange for industrial production showing how and to what extent the allocations have been substantially reduced and (b) increase in the production of essential commodities without which the country's import bill would have been correspondingly higher. The study has covered a large area of industrial activity covering 112 selected industries which account for about two-thirds of production of the industries reporting to DGTD. This study has shown that the value of production of the industries covered has increased from Rs. 31,748 million in 1971 to Rs. 37,036 million in 1972. Foreign exchange allocation for these industries, however, has come down from Rs. 2890 million to Rs. 2765 million in the respective years. Thus the foreign exchange allocation as percentage of the value of production came down from 9.1 per cent in 1971 to 7.5 per cent in subsequent year. In other words, the fall in foreign exchange allocation as related to production was over 17 per cent. Again, the study has revealed that the foreign exchange savings due to increased production was of the order of Rs. 5415 million.

Similar studies were conducted by the DGTD in the earlier years also. For the period 1960 to 1967 their study covering 79 selected industries indicated that while the production increased 2.5 times more in value, there was a 40 per cent reduction in the foreign exchange allocation. Against savings in foreign exchange expenditure due to increased production was over Rs. 4000 million during the seven year period ended in 1967.

Studies covering 112 industries for the years 1968, 1969 and 1970, 1971 showed that the allocation of foreign exchange relating to production fell by about 4 per cent and 20 per cent respectively.

The Government of India have enuntiated various policies towards the industrial production and growth and have accorded continuous emphasis on import substitution. The phased manufacturing programmes, the starting material for production and requirements of foreign exchange for capital goods and raw materials, components etc. are scrutinised keeping import substitution as one of the significant objectives of industrial growth. In the import policy for 1973-74, special emphasis was laid on the aspect of import substitution and a host of items were removed from the permissible list of imports taking into account the expansion of indigenous production.

Let us look at the extent of foreign exchange saving on selected industries due to increased production. Compared to 1971, the output of ball and roller bearings in 1972 rose to a value of Rs. 266 million from Rs. 240 million while the foreign exchange expenditure on the industry was reduced from Rs. 48 million to Rs. 27 million. The typewriter industry offers another example and its production improved from Rs. 41.4 million to Rs. 43 million and the foreign exchange expenditure was reduced from about Rs. 3 million to about Rs. 1 million. The outgo of foreign exchange on sewing machines was nearly of the order of Rs. 438,000 in 1971 and even this was reduced to hardly Rs. 3400 in the subsequent year. The production value of the industry rose from Rs. 45 million to Rs. 47 million. In the case of railway wagons, the output has substantially grown from Rs. 170 million in 1971 to Rs. 253 million in 1972 and the foreign exchange outgo did not increase but remained at Rs. 100,000. For welding electrodes the output grew from Rs. 120 million to Rs. 182 million but the foreign exchange expenditure fell from Rs. 15 million to Rs. 13.6 million. In the field of commercial vehicles including cars and jeeps, the output was of the order of Rs. 2780 million in 1972 against Rs. 2623 million in the year that preceded but the foreign exchange outgo fell from Rs. 438 million to Rs. 330 million. Automobile ancillaries also recorded production improvement from Rs. 1202 million to Rs. 1245 million but the foreign exchange expenditure was reduced from Rs. 177 million to Rs. 102 million. Such examples abound. The industries whose output has sizeably grown in 1972 as compared to 1971 and whose foreign exchange expenditure was also sizeably reduced include among others agricultural tractors, diesel engines, power driven pumps, drilling equipment, reduction gears, dairy machinery, cables and wires, electric motors, switchgears, electric lamps, electric fans, transformers. electronic test equipment, scientific and surveying instruments, aluminium foils and container sheets, aluminium, antimony, steel forgings, automobile tyres and tubes, refractories, cement, drugs and pharmaceuticals, textile auxiliaries and petro-chemicals. In all these industries, progress in import substitution is evident.

The production of 112 industries studied for import susbstitution by the DGTD increased to Rs. 37036 million in 1972 from Rs. 31748 million 1971 (with about 17 per cent increase in terms of value). Quantitatively, the actual increase in production is estimated to have gone up by 9.2 per cent. Among these industries the quantitywise improvement in 1972 over that in the preceding year was applicable to most of the industries studied. The important ones among them are ball and roller bearings (21.6 million numbers in 1972 against 19 million numbers in 1971); railway wagons (9721 numbers in terms of four-wheelers against 8010 numbers); steel wire ropes (20,000 tonnes against 19,670 tonnes); cranes (11,840 tonnes against 10,000 tonnes); steel pipes and tubes (369,000 tonnes against 287,000 tonnes); bright bars (56,000 tonnes against 51,740 tonnes); agricultural tractors (18,300 numbers against 16,559 numbers) power driven pumps (278,000 numbers against 244,590 numbers); eleectric motors (2.74 million H. P. against 2.60 million H. P.); dry cells (620 million numbers against 580 million numbers); electric lamps (181 million numbers against 160 million numbers); electric fans (2.5 million numbers against 1.96 million numbers); transformers (11.3 million KVA against 10.2 million KVA); aluminium foils and container sheets (5500 tonnes against 5100 tonnes); steel forgings (62,000 tonnes against 59,000 tonnes); automobile tyres and tubes (9.8 million numbers against 9.2 million numbers); cement (1575 million tonnes against 1493 million tonnes); plywood (33 million sq. metres against 28 million sq. metres); industrial explosives (32,666 tonnes against 32,320 tonnes); cosmetics and toiletries (11.8 million tonnes against 10.3 million tonnes); Soda ash (486 million tonnes against 479 million tonnes); caustic soda (391 million tonnes against 376 million tonnes) and caustic potash (8.3 million tonnes against 6.8 million tonnes).

Among the various efforts made for promoting indigenous production and consequently the import substitution, the DGTD study for the years 1971 and 1972 has specifically mentioned certain products whose value of import exceeded Rs. 10 million a year. For instance, alkyl benzene which is an essential raw material for the synthetic detergent industry has no indigenous production and the requirements are met through imports. Its imports during 1971-72 amounted to about Rs. 16 million. For this raw material, a capacity of 30,000 tonnes per annum is being planned by M/s. Indian Petro-Chemicals Corporation in the public sector and the production is expected to start by the middle of 1975.

Raw hidess constitute another area where imports are essential. In fact, raw hide imports are allowed under O.G.L. (open general licence). These imports during 1971-72 were valued at Rs. 13 million. Indigenous availability of raw hides is being augmented by setting up a number of flaying and caracass recovery centres.

As a vegetable tanning material, wattle extract is also allowed to be imported under OGL. Its imports were of the order of Rs. 25 million in 1971-72. For this product too, steps are being taken to develop wattle extract plantations as also identify other species of vegetable tanning materials with a view to substitute wattle to the extent possible.

Nylon tyre yarn and cord is required as a major raw material for the manufacture of tyres. To effect import savings in this area, two units with a total licensed capacity of 2400 tonnes per year have already gone into production and two more units are implementing further capacity creation. Foreign collaboration proposals have also been approved in this regard.

Special purpose synthetic rubber cannot be substituted by the indigenously available natural rubber. However, it is planned to set up manufacturing capacities for this item by the end of the Fifth Five-Year Plan.

Newsprint is another example of import substitution/saving. There is only one newsprint unit in operation with an installed capacity of 75,000 tonnes per year. Its actual production during 1972 was 42050 tonnes. After the firm's expansion of its pulping unit is completed by the end of the current year, it would be in a position to achieve an optimum production of 70,000 tonnes by 1974-75. One more unit with an installed capacity of 60,000 tonnes has been issued industrial licence for setting up a newsprint mill. Besides, two more units with a total capacity of 104,000 tonnes a year are issued letters of intent. Further, M/s. Hindustan Paper Corporation have a proposal for the establishment of a newsprint mill with a total annual capacity of 80,000 tonnes. If all these schemes materialise, there will be a total annual capacity of 244,000 tonnes per year available and a major portion of the domestic demand for newsprint estimated at 750,000 tonnes by 1978-79 would be met by indigenous production. In 1971-72, the import bill for newsprint was as much as Rs. 270 million.

For rayon grade pulp presently there are three units in operation with a total capacity of 117,600 tonnes a year. Their production during 1972 was only 86050 tonnes. Additional capacity of the order of 100,400 tonnes per annum was covered by letters of intent. The present demand is of the order of 140,000 tonnes including 10,000 tonnes a year of tyre-cord grade pulp. The balance of the demand over and above indigenous production is currently met by imports. In fact, the demand is likely to go up to 205,000 tonnes by 1978-79. With the implementation of the new schemes, it is expected that the demand would be met fully by indigenous production.

Rockphosphate is required mainly for the production of phosphoric fertilizers, phosphorous and industrial phosphoric acid for producing phosphate. The current demand at 1.4 million tonnes is expected to go up to 7 million tonnes by 1978-79, while it has not reached even a capacity of 300,000 tonnes per year now. It is stated that the Government of Rajasthan are gearing up to achieve a production of 2 million tonnes by the end of the fifth five year plan (1978-79).

Fluorspar is a basic raw material for the manufacture of cryolite and aluminium fluoride. The requirements are presently met through imports. In 1971-72, the import was 17,700 tonnes valued at Rs. 14 million. Substantial deposits of fluorspar have been located in Gujarat and a modest production programme has already started. It is hoped that by the next two years, indigenous production would be sufficient to meet the country's demand.

Cryolite and aluminium fluoride are essentially needed in the aluminium industry. Against the present requirement of 15,000 tonnes per annum, indigenous production is 4000 tonnes of cryolite and 3000 tonnes of aluminium fluoride. Imports in 1971-72 were Rs. 12 million for cryolite and Rs. 14 million for aluminium fluoride. A capacity of 313,700 tonnes and 28050 tonnes for these two chemicals respectively has been either licensed or covered under letters of intent. With the promise of fluorspar availability from Gujarat, the imports are likely to be stopped by 1980-81.

Titanium dioxide, a versatile industrial white pigment finding its application in industries like paint, rayon printing inks, rubber, ceramics and plastics has only one unit with a capacity of 6500 tonnes per year now. Its production in 1972 amounted to 5900 tonnes. The present requirement is about 15,000 tonnes a year. The gap is being met through imports at a value of Rs. 17 million. The existing unit in the public sector, M/s. Travancore Titanium Products Ltd., is engaged in implementing an expansion scheme to improve its capacity by 18,000 tonnes. Also, three letters of intent were issued to the extent of 45,000 tonnes per year to two units in Kerala and one in Orissa. Fortunately, India is rich in ilmenite, the principal raw material for the manufacture of titanium dioxide and thus there are prospects of even exporting this pigment, once the indigenous requirements are fully met.

The present demand for graphite electrodes and anodes at 10,000 tonnes is estimated to go up to 26,000 tonnes by 1978-79 but the actual production now is only 4,000 tonnes a year. An expansion scheme of the single existing unit for a capacity of 5400 tonnes per year is likely to be implemented by the end of the current year. Also another company has received approval to establish a production capacity of 5,000 tonnes additionally. Two more proposals for setting up a total capacity of 14.500 tonnes in the public sector are also under consideration.

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India imported nearly Rs. 20 million worth of sulpha drugs in 1971-72 (385 tonnes). Against the available capacity of 1105 tonnes, production in 1972 was 1480 tonnes. As a measure of import saving over the long run, further capacity has been sponsored by way of its expansion up to 800 tonnes. The expanded capacity envisages sizeable production of items like sulpha dimidine and sulpha guinadine which are currently imported substantially.

Yet another area in import substitution relates to industrial valves. Valves and cocks are essential components for several types of plant and machinery. In India today there are nine units with a registered capacity of 1.85 million numbers per annum. The production in 1972 was of the order of Rs. 102 million. The indigenous production has not been able to cope up with the rising demand and during 1971-72 the imports on this account totalled Rs. 30 million. In fact, large quantities of valves and cocks get imported along with the plants and equipment and as such the actual import of these items would be much more. The estimated demand for all types of industrial valves is of the order of Rs. 130 million. The demand is going up with the rapid industrialisation in the country. To fill in the gap in demand and production, the Indian Government have recently approved 13 schemes with a proposed capacity of 288,500 nnmbers (Rs. 210 million) for the manufacture of sophisticated valves. Once this further capacity becomes available it is likely that a substantial cut could be achieved in the import bill.

In the industrial machinery section the extent of import substitution has been particularly noteworthy. Wide gaps between the demand and the existing capacity are reported for rubber machinery, printing machinery, paper pulp machinery, synthetic fibre machinery, chemical machinery, leather and sugar machinery and dairy machinery. In all these sections new schemes have been approved and creation of further capacities envisaged so that the outgo of foreign exchange by way of their imports, is sought to be minimised.

To sum up, vital endeavours are underway to effect saving on imports through schemes for expanding the existing capacity available and encouraging installation of additional capacity. In addition to the saving in imports by improvements in indigenous production, the present pattern and range of manufacturing activity is being suitably modified so as to encourage substitution of material to be imported with whatever is available indigenously. These measures do not merely have the object of foreign exchange saving but also aim at broadening and deepening the industrial structure of the economy. ☐

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EXPORT RANGE OF GUJARAT CORPORATION

With an export record of over Rs. 30 million since its inception in 1966, M/s. Gujarat Export Corporation Limited, Post Box No. 290, Ahmedabad, has recently added one more feather in its cap. It has proved instrumental in booking an order for the supply of textile spare parts to the U.K. market. The order which was of the value of Rs. 1.8 million has been secured through the Corporation by M/s. Precise Textile Machinery Industries, Ahmedabad.

A state sponsored organisation and a recognised Export House in India, the Gujarat Corporation has so far exported a wide range of 101 commodities to 56 countries. The best part of their exports is in the engineering sector. The examples of their successful export effort in the engineering field include diesel engines, electric motors and starters, transformers, centrifugal and other varieties of pumps, castings, aluminium conductors, steel tubes, pressure vessels, water metres, builder's hardware, machine tools and foundry equipment. Besides, they undertake the overseas supply of plants for textile dyes, choke making plants, caustic soda recovery plants, solvent extraction plants, sulphuric plants and oil mill machinery. They have also established themselves in the export trade of bicycle accessories, steel furniture and a broad range of industrial machinery such as textile machinery, printing machinery, agricultural machinery and pharmaceutical machinery.

Aside from engineering products, the Corporation has a proven record in the export of chemicals including insecticides and pesticides, food colours and dyes, as also chemicals for paint, paper, textile and pharmaceutical industries. Some of the other areas in which the Corporation has successfully exported are processed fruits and food products, spices and vegetables, marine products, handicrafts, plastics, stationery items, textiles and cotton waste.

Of the wide spread overseas customers that the Corporation has served so far, the prominent are the U.S.A., Canada, U.K., Netherlands, Switzerland, Greece, West Germany and Sweden among the developed market economies. Their export supplies have also reached the West and South East Asian countries and the African continent.

TRANSFORMERS AND COMPONENTS FOR EXPORT

The State Electricity Authorities in New Zealand, have recently approached an Indian party for the supply of on-load-tap changers (DLTC). M/s. Crompton Greaves Limited, 1, Forbes Street, Fort, Bombay, has secured the order. The DLTCs are mounted on transformers and they help control voltage fluctuations in a grid and ensure steady voltage supply to consumers. The Bombay firm has secured this order despite stiff global competition. They have already despatched the first of these specialised equipment and two more are to follow shortly.

The firm has recently executed a contract for the supply of 150/KVA/400/208 V transformers to Singapore. This was a repeat order and was received from an American Electronic Component firm for its plant being set up at Singapore. Significantly, the order was executed by the firm within a month from the date of receipt of the contract. In addition to many other orders on hand, the firm is to shortly supply transformers valued at Rs, 730,000 to an electric fan manufacturing unit being set up by it at Baghdad (Iraq). It has also won a contract for complete electrification of a textile mill in Libya in collaboration with another Indian firm–M/s. Star Textiles, Bombay.

The activities of the firm include the manufacture, distribution, installation and servicing electrical and allied equipment such as industrial motors, fractional horse power motors, control gear, power and distribution transformers, alternators, switchgears, tap-changers, electrical measuring instruments, switchboards, lamps and lighting fittings, batteries, carbon brushes, ceiling and exhaust fans, pump sets and pully drivers. Besides these, the firm also undertakes contracting for installation and maintenance of electrical and allied equipment and systems.

The firm has entered into a technical collaboration agreement with M/s. Crompton Peshmsons Limited, England and also exports its products through the British firm to markets the world over.

India's transformer industry in the organised sector is comprised of 29 units and their combined production during 1972 was of the order of 10.8 million KVA. In fact, the production during the year even outstripped their total installed capacity of 9.26 million KVA.

The total exports of transformers during 1971-72 were of an order of Rs. 16.52 million as against Rs. 9.30 million in the preceding year. In the first three quarters of 1972-73 (April-December 1972), the exports totalled Rs. 11.55 million. Additionally, parts and accessories netted Rs. 4.55 million. During 1971-72, Malaysia, Sri Lanka, Guyana, Syria, Nigeria, New Zealand and Sudan were the leading destinations.

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RDERS FROM INDIAN ARTICIPATION IN WORLD FAIRS

About Rs. 75 million worth of orders have been ooked as a result of India's participation in international airs abroad during the first half of 1973 (January-June). n this period, there were eight such participations in ripoli, Leipzig, Tokyo, Paris, Brno, Milan, Barcelona, oznan and a wholly Indian exhibition at Kuwait.

The Indian exhibition at Kuwait which vas held in February, 1973 enabled the Indian articipants to book on-the-spot orders worth Rs. 1.39 nillion. Further business of Rs. 350,000 was also nder negotiation, besides the receipt of a number of rade enquiries. A special feature of the exhibition vas the projection of India's capability in offering onsultancy services in the field of industrial levelopment.

India's participation in the Tripoli International air which was held in March 1973 proved responsible for the receipt of about 500 trade enquiries. Trial orders of nearly Rs. 0.9 million were booked.

Business worth Rs. 30.62 million was concluded at the Leipzig Spring Fair held in March 1973. Of this, Rs. 26.6 million worth of business was secured from the German Democratic Republic alone, while the visitors from other countries like Federal Republic of Germany, Greece, Czechoslovakia and Yugoslavia concluded additional business worth Rs. 4 million.

Firm orders of about Rs. 2.29 million were booked by India as a result of its participation in the Tokyo International Trade Fair during April-May, this year. Further, business of about Rs. 1.95 million was reported to be under negotiation at the conclusion of the fair.

For the first time, India participated in the *Foire De Paris* held during April-May, 1973. Indian exporters concluded good business of about Rs. 6 million. These orders were booked by M/s. Sidhartha Exporters for the supply of readymade garments and other items worth Rs. 5.6 million; M/s. Pushpam Exports for the supply of readymade garments worth Rs. 0.3 million and M/s. Agra Chain Manufacturing Co. for the supply of imitation jewellery worth about Rs. 100,000. The Indian Mission at Paris have recently informed the Indian Government of the intended purchase of 15000 children's bicycles by a French importer.

The Fourth International Consumer Goods Fair at Brno (Czechoslovakia) was held in April this year. The Indian participation at the fair has succeeded in negotiating business of the order of Rs. 18.5 million.

Retail sales conducted by the Indian Pavilion at the Milan International Trade Fair held during April this year, amounted to Rs. 235,000. Also orders were booked to the extent of Rs. 3.25 million.

Indian participation at the 41st Barcelona International Fair held in June, 1973 has resulted in 45 trade enquiries and business of about Rs. 0.5 million was under negotiation.

While the actual sales to the extent of Rs. 275,000 were effected, orders booked for the supply of drilling and milling machines totalled Rs. 9.5 million as a result of India's participation at the Poznan International Technical Fair held during June, 1973.

In all, the emphasis of Indian display at the above exhibitions was on India's non-traditional commodities and her expertise to export technical know-how.

INDIAN FOOTWEAR TO WORLD MARKETS

India-manufactured footwear has come to enjoy growing popularity in markets the world over. The leather industry in India has in recent years, switched over to gradual diversification in exports–from raw or semi-finished skins to finished leather products. Footwear occupies a significant place in this context. In 1971-72, its exports fetched foreign exchange valued at Rs. 117.60 million. In the preceding year, the exports amounted to Rs. 114.40 million. During the first three quarters of 1972-73 (April-December 1972), the exports rose to a level of Rs. 93 million as against Rs. 82.10 million in the corresponding period of the preceding year.

All leather closed-toe-footwear constitutes the major export variety. U.S.S.R. is the best market. Nepal and U.S.A. are among other buyers. The next best variety is that of all leather open-toe-footwear. U.S.S.R., is again the best buyer. Australia, Nepal, Canada, U.K., Bulgaria and Fiji Islands are among the other markets.

Rubber soled upper canvas footwear is yet another variety. U.K., U.S.S.R., Windward Islands, Canada, Denmark and Netherlands are the leading markets. Rubber soled upper leather footwear, rubber footwear leather soled and embroidered uppers, rubber or plastic soled footwear and footwear with other soles also figure prominently in India's export trade.

M/s. Bata India Limited, 30, Shakespeare Sarani, Calcutta-16, an important manufacturer in the line, earned Rs. 40 million per annum from hard currency areas. The footwear manufactured by the firm is in large demand abroad including U.S.A., Canada, U.K. and other European markets.

The manufacturing range of the firm includes leather, rubber and canvas footwear and tanning machinery. The firm's main factory is located at Batanagar in West Bengal for leather footwear and other plants at Digha, Patna and Faridabad. Its tannery activities are carried out at Batanagar and Mokamehghat in Bihar. Besides, its rubber collecting centre is located at Kottayam in Kerala. The total production of footwear by the plants of the firm aggregates to about 45 million pairs per annum. At the domestic level, the firm's footwear enjoys wide popularity.

PINEAPPLE PULP FOR EXPORT

Pineapple pulp is soon to enter the vast stream of India's export trade with the East European markets. Amounting to 50 tonnes at a value of approximately Rs. 146,250 the pulp is to be supplied to M/s. AGRO, Poland. Hitherto, India has been supplying to Poland, among others, pineapple juice and slices. The shipment is to be made in September this year. The contract has been bagged by the State Trading Corporation of India.

The contract has been secured as a result of a visit of a trade delegation from Poland to Cochin in March last. The delegation expressed desire to buy at least 600 tonnes of the pulp. It is expected that STC will offer larger quantities for export in the near future.

India's total export of fruits preserved and fruit preparations amounted to Rs. 18.35 million in 1971-72 as against Rs. 17.25 million in the preceding year. During the first nine months of 1972-73 (April-December, 1972), the exports shot up as much as Rs. 28.60 million, registering over 55 per cent increase even over the export value of the full preceding year.

In the first three quarters of 1972-73, the composition of exports was : mango juice Rs. 20.5 million; mango slice brine Rs. 2.38 million; mango jams etc. Rs. 2.12 million; fruits preserved in syrups Rs. 1.65 million and other juices Rs. 1.46 million.

U.S.S.R. constituted the biggest buyer of mango juice which alone imported Rs. 15.25 million worth while U.K. and Poland were the topmost buyers of mango slice brine which bought worth Rs. 1.37 million and nearly Rs. 1 million, respectively. U.S.A. was the principal importer of mango jams. Its intake was valued at Rs. 2.10 million while fruits preserved in syrups were mainly purchased by U.S.A., Poland, U.K., U.S.S.R. and Federal Republic of Germany.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT POSITION OF ENGINEERING PRODUCTS

The first quarter of 1973-74 (April-June, 1973) has witnessed an estimated rise of 13 per cent in India's engineering products exports at Rs. 399.50 million as compared to Rs. 299.70 million in the comparable period of 1972-73, according to the Engineering Export Promotion Council, Calcutta. The estimate is exclusive of land route exports as also overseas supplies from minor ports and as such the actual export value might even be more.

The export of engineering goods shot up to ver Rs. 1502 million in 1972-73 as against Rs. 1260 nillion in the preceding year – a 19 per cent improvenent. Wayback in 1956-57, the export value was nly of the order of about Rs. 54 million.

In the first quarter of 1973-74, improvements were ecorded in the offtake of automobile and auto parts, ndustrial plant and machinery, railway wagons, oaches and parts, M. S. pipes and fittings, bicycles nd parts, handtools, electric motors, transformers nd switchgear, electronics, machine tools, castings and orgings, wire products, airconditioners and refrigeraors, ferrous hollow-ware, bright bars and shaftings, il lamps and stoves etc. Exports have, however, uffered in the case of electric wires and cables, steel tructurals, dry and storage batteries, electric fans nd parts, scientific and surgical instruments and steel structurals.

Commoditywise, automobiles and auto parts constitute the largest sector of export dynamism. Their exports were valued at Rs. 172 million in 1972-73. Next in importance were electric wires and cables.

The small-scale sector in the country has come to contribute substantially to the export effort of the engineering industry. This sector is estimated to have contributed about 12 per cent of the overall export value of engineering products in 1972-73.

Countrywise, the South East Asian market is the most important, followed by the West Asian countries. In 1971-72, South East Asia absorbed the goods worth Rs. 330 million. Africa (Rs. 340 million), West Asia (Rs. 258 million), and the East European region (Rs. 130 million) were the other markets while West European countries imported these products at a value of Rs. 115.5 million. America, West Indies, Oceanic Islands and Australia imported commodities worth Rs. 42.3 million, Rs. 3.8 million, Rs. 7.2 million and Rs. 32.4 million respectively in the year.

Aside from exporting sophisticated engineering products, a large number of enterprises in India are in a position to render consultancy services in many engineering fields abroad.

The engineering industry is hopeful of attaining a target of Rs. 1800 million for the year 1973-74.

PROSPECTS FOR COFFEE EXPORTS

With the withdrawal of quota measures under the International Coffee Agreement effective from October 1973, India hopes to increase her share in the world coffee markets. Indian exports to the quota countries have been so far affected in view of the quota limitations under the Agreement. The annual quotas for export to the quota countries were related to basic quota under the Agreement and hence the exports to traditional markets had to be limited to those levels.

Grown in an area of about 13,950 hectares (84,360 hectares under arabica and 55,120 hectares under robusta), India's coffee production totalled 89,500 tonnes in 1972-73 against 69,000 tonnes in the preceding year. Its exports were of the order of 48,130 tonnes at a value of Rs 328.40 million in 1972-73 as compared to Rs. 35,700 tonnes at Rs. 220.70 million in 1971-72. During 1973-74, the production estimated is 90,000 tonnes and likely exports during the year might be about 50,000 tonnes.

For the current coffee year (October 1972 – September 1973), the International Coffee Council announced an initial world annual quota. The Council fixed only the quotas for the first quarter namely, October-December, 1972 at its meeting in December, 1972. The Council could not come to any agreement regarding the fixation of quotas for the remainder of the coffee year. In other words, each producing country was free to export as much coffee to quota markets as it would wish to, on obtaining from the International Coffee Organisation the stamps required for the export purpose in the subsequent quarters of the coffee year ending September 1973. Following the failure of the International Coffee Organisation to fix quotas, the producer members of the Organisation met in London in December 1972 and agreed to impose on themselves a voluntary restraint on exports to the limits contemplated by them. India fell in line with this general concensus but there have been violations of this agreement, even by some of the prominent producing countries who were strong advocates of self-restraint. India had, therefore, taken steps to protect her interest and directly applied to the International Coffee Organisation for allocation of export stamps to the full extent of her export capacity. The ICO has released to the Coffee Board the coffee export stamps of the value of 46,650 tonnes for export during the year 1972-73 ending September 1973. Indian sales against this export quota have so far, amounted to Rs. 39,560 tonnes during the period October 1972 to July 1973; the balance of 6990 tonnes is expected to be sold by the end of August 1973. The actual exports to the quota countries from India during October 1972-July 1973 have so far, amounted to 26,800 tonnes.

The question of extending the present International Coffee Agreement which is to expire by September 1973 was considered recently at the session of the International Coffee Council. It was resolved to extend the Agreement for a further period of two years effective from October 1973. But in extending the Agreement, all regulatory mechanisms and economic provisions under the original Agreement were deleted. Thus, the International Coffee Organisation will essentially continue as a mere centre for collection and maintenance of statistical information. With the lifting of quota restrictions from October 1973, it would be possible for India to increase its exports to the quota countries.

In addition to the export to the quota countries, India has stepped up its supplies to other markets too. It is hoped that by 1974-75 a total export effort of 47,700 tonnes would take place out of the estimated production of 96,700 tonnes by that year and in the total export estimated, the supply to quota countries would be 25,700 tonnes while to non-quota countries, it is expected to be of the order of 22,000 tonnes.

EXPORT QUOTA OF SEMI-PROCESSED HIDES AND SKINS

The Government of India have formulated a new scheme of export quotas for semi-processed hides and skins for the year 1973-74. For taking the level of exports for the purpose of fixation of quotas, the calendar year 1972 has been taken as the base year. On the overall exports during 1972, a cut of 20 per cent has been imposed in respect of E.I. and chrome tanned cow and buffalo hides, 10 per cent in respect of E.I. and chrome tanned cow calf, buffalow calf, sheep and goat skins. It is on this basis that the overall quota ceiling was fixed for the year 1973-74.

Of the quota ceiling for the year 1973-74, 10 per cent has been reserved for non-exporting tanners. The State Trading Corporation of India has been authorised to make *pro rata* allocation to each unit for each type of hide and skin depending upon the overall producton of the unit concerned during the preceding three years. The balance of the overall quota ceiling (90 per cent) is to be allowed *pro rata* to manufacturers and merchant exporters on the basis of their best year's performance during any of the five calendar years 1968 to 1972.

BEER EXPORTS UP

India's export trade in alcoholic beverages, particularly beer, has registered a noteworthy increase. From a meagre Rs. 169,500 during 1971-72, these exports went up to Rs. 1.42 million in the first three quarters of 1972-73 (April–December 1972). The growth in beer exports was mainly responsible for this improvement. It earned hardly Rs. 53,530 in 1971-72 while in the first nine months of the subsequent year it has fetched Rs. 1.3 million. Nepal was the most important customer and its offtake was of the order of 1.3 million.

Indian exports of liquors totalled Rs. 40,520 in 1969-70 and Rs. 75,820 in 1970-71. Apart from beer, the varieties exported are liquors, whisky, wine and brandy. There were, however, no wine exports in the first three quarters of 1972-73.

Against this export picture, it would be interesting to assess the position of liquor imports into India. The import bill in 1969-70 was of the order of Rs. 4.8 million. It came down to Rs. 2.9 million in 1970-71 and Rs. .2.7 million in 1971-72. For the first nine months of 1972-73, the import further came down to Rs. 1 3 million only. The major component of liquor imports is whisky. Whisky imports came down from Rs. 2.4 million in 1969-70 to Rs. 1.55 million in 1970-71 and marginally rose to Rs. 1.69 million in 1971-72; in the first three quarters of 1972-73, the whisky imports were worth Rs. 0.88 million. The wine manufacturing industry in India is still in its infant stage. At present, about 10,000 hectares mainly spread over wide areas of Maharashtra, Andhra Pradesh, Haryana, Punjab and Uttar Pradesh are under grapes.

As a measure of improving liquor exports, it is proposed that liquor should be supplied duty-free to foreign embassies stationed in India.

FOREIGN EXCHANGE FROM JOINT VENTURES ABROAD

An amount of Rs. 16.34 million is reported to have been earned from India's industrial joint ventures abroad by way of dividends, technical know-how fees, managerial fees and royalty. Also an amount of Rs. 90.56 million is reported to have been secured in foreign exchange through exports of plant, machinery, equipment and raw materials, over and above Indian equity participation.

Out of 37 ventures so far on stream abroad with Indian assistance, 13 are running at profits and 11 at losses while the rest have gone into production only recently and it is too early to expect returns.

Among the industries either set up or proposed to be set up are those for the manufacture of textiles, engineering products, cement, plastics, asbestos cement, pulp and paper, sugar, palm oil, fractionation and steel pipes. Among the various joint venture proposals abroad, one is that of a State public sector undertaking, M/s. Mysore Government Soap Factory, Bangalore which has been permitted to set up a soap factory in Malaysia.

While the foreign exchange earning by way of overseas supply of machinery equipment and raw materials mentioned above at Rs. 90.56 million refers to the cumulative earning over the years, the value of such earning during 1971-72 was of the order of Rs. 26.7 million. Again on a cumulative basis the returns by way of dividend stood at Rs. 6.8 million by March, 1973 and Rs. 9.6 million by the same period by way of technical know-how fees and managerial fees.

The total Indian investment in the 37 projects which have already gone into production and 55 more in various stages of implementation is Rs. 70.5 million and Rs. 96.4 million respectively. Out of these investments Rs. 65.5 million and Rs. 83.3 million respectively are through exports of plant and machinery and the balance through the capitalisation of technical know-how and other fees.

TOP TEN MARINE PRODUCT EXPORTERS

Ranked on the basis of its export performance in the year 1972, India's top most exporter of frozen and canned marine products was M/s. Melavil Industrial and Commercial Enterprises, Quilon (Kerala State). In terms of quantity, the firm had exported 1.10 million kgs at a value of Rs. 23.05 million during 1972. In the earlier year (1971), its exports totalled 1.09 kgs at a value of Rs. 17.77 million. Next in importance was M/s. Eastern Sea Food Export Pvt. Ltd., Madras. Its overseas supply totalled 0.6 million kgs. at Rs. 17 million in 1972. In 1971, their exports were hardly worth Rs. 8.6 million (0.33 million kgs). M/s. Esmario Export Enterprises, again from Quilon was the third best and it netted foreign exchange worth Rs. 16.8 million in 1972 as against Rs. 15.7 million in 1971. M/s. Tata Oil Mills, Bombay have secured Rs. 13.64 million in 1972 as against Rs. 8.6 million in the preceding year. M/s. Oceanic Products Exporting Co. Quilon earned Rs. 13.6 million in 1972 but in the preceding year their exports were more at Rs. 15.7 million. M/s. Castlerock Fisheries Pvt. Ltd., Bombay exported their frozen canned marine products worth Rs. 12.8 million in 1972 as compared to Rs. 8.4 million in the year that preceded. M/s. Indo-Marine Agencies (Kerala) Private Limited, Cochin which was the top exporter in 1970 at Rs. 20.76 million secured only Rs. 12.4 million in 1972. The other three that have been in the top ten list for the export of frozen and canned marine products were : M/s. Southern Seafoods Private Limited, Madras; M/s. Bharat Seafoods, Cochin and M/s. Chemmeens (Regd.), Cochin whose export value in 1972 was Rs. 12 million, Rs. 11.72 million and Rs. 11.7 million respectively.

In the export field of dried marine products M/s. Gujarat Fisheries Central Cooperative Association Ltd., Ahmedabad, ranked first in 1972 at Rs. 2.83 million (181,325 kgs.). The other exporters in the line and their export values in 1972 are as follows : M/s. M. K. Khaja Rs. 1.44 million; M/s. Hashambhoy Aloo Mohamed & Son, Bombay Rs. 1.10 million; M/s. Juma Trading Company, Bombay Rs. 0.76 million; M/s. Camillus Fernando, Tuticorin Rs. 0.72 million; M/s. I.A. Leon Fernando, Tuticorin Rs. 0.69 million; M/s. R.K.K.J. Sathik & Co., Madras Rs. 0.69 million; M/s. Haji Juma Company, Bombay Rs. 0.51 million; M/s. M.M. Abdul Kader, Mangalore Rs. 0.43 million and Tropical Traders, Cochin Rs. 0.41 million.

INDIAN MACHINERY AT INTERNATIONAL ENGINEERING EXHIBITION

The Australian Minister for Industry and Overseas Trade, Dr. J. F. Cairns has recently visited the Indian pavilion at the International Engineering Exhibition, (1973) organised in Melbourne. The pavilion was spread over 2,500 square feet displaying a wide variety of Indian engineering goods, including machine tools electric motors, pumps, fans, knitting machines, electrodes, bench vices, wire ropes, hi-fi equipment, pressure valves and bicycle parts. The Minister expressed surprise at the excellence of Indian engineering products. He confirmed that he hoped to send an Australian team representing Government and private industry to India shortly to assess the possiblity of long-term purchases of machinery.

About 130 international and national exhibitors are taking part in the exhibition which is expected to lend a strong impetus to exports of Indian engineering products to Australia, more especially in view of the recently announced tariff cut.

EXPORT TRADE IN HANDICRAFTS

Indian handicrafts are in large demand at home and abroad. These are responsible for bringing in a sizeable amount of foreign exchange every year.

The export value of handicrafts increased to Rs. 1080 million in 1972-73 as compared to Rs. 905 million in 1971-72. In fact, the exports rose to this level from Rs. 193.5 million in 1961-62.

The total production of handicrafts was estimated at Rs. 4000 million for the year 1972-73. During the Fifth Five Year Plan (1974-75 to 1978-79), it is targetted to increase to the level of Rs. 6000 million while exports in the period are to be raised to Rs. 2000 million.

To achieve these targets, rural and tribal crafts are being accorded special encouragement and emphasis is laid on the development and marketing of lesser known crafts.

A Task Force set up by the Planning Commission has suggested an outlay of Rs. 400 million in the public sector - Rs. 170 million for Central schemes and Rs. 230 million for State schemes for this purpose.

The All India Handicrafts Board is seriously engaged in increasing the production and exports. The Board has proposed schemes for technological improvement in art metalware at Moradabad; washing and dyeing chambers for carpets in Mirzapur-Bhadhohi areas, setting up of extension centre for bamboo products at Anagamalai (Kerala); research institute for cane and bamboo in Tripura; carpet weaving centres at five different places and for setting up Handicraft Estates at Jaipur and Pondicherry.

INCREASED DEMAND FOR INDIAN SPORTS GOODS

India has crossed the Rs. 30 million target fixed for the exports of sports goods in 1972-73 by Rs. 6.6 million. Overseas demand for these goods has been on steady rise. During 1972-73, the exports were worth Rs. 36.6 million against Rs. 25.5 million in 1971-72 showing an increase of 44 per cent.

The increase in demand in 1972-73 has been for footballs and other leather balls, rackets, bladders, indoor games and EPNS sportswares.

The countries importing Indian sports goods are mainly Australia, Bahrein, Austria, Belgium, Canada, Sri Lanka, Netherlands, Italy, Kenya, Kuwait, France, Malaysia, Singapore, Mauritius, Zambia, Malawi, Sweden, Spain, Switzerland, Thailand, U.K., U.S.A. and West Germany. Poland has been tapped as a new market where sports goods worth about Rs. 1 million have been exported in the year.

A target of Rs. 50 million has been fixed for the exports of sports goods in 1973-74.

NDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

NTERNATIONAL MONETARY REFORM

STAND BY DEVELOPING NATIONS

The Group of 24 developing countries which has ecently met in Washington to coordinate their views on the proposed reform of the international monetary ystem has submitted a joint report. The report has broadly indicated the line of action to safeguard the nterests of developing countries and to ensure adequate ransfer of real resources in their development programmes. There were two alternatives placed before the Committee of Twenty which is to draw up the outline of world monetary reform. On these alternatives, the Group of developing countries has expressed in their oint report their conviction that the characteristics common to both the alternatives, namely, universality in application and an equitable sharing of the burden of adjustment are goals worth pursuing. These would imply a commitment to a one world system of interdependent economies. The developing countries have emphasised that the effective working of the adjustment process is intimately bound up with the access by developing countries to developed market economies and with the aggregate flow of real resources to developing countries and its financing.

The developing countries have reaffirmed their full support to the view that the amount of SDR (Special Drawing Rights) allocations should be determined on the basis of global monetary requirements. They, however, felt that the interests of the developing countries should be fully taken into account in the determination of the effective yield of SDRs.

The Group of developing countries also expressed their view in their report that their role in the decision-making process should be suitably strengthened through an appropriate adjustment in the structure of Fund (IMF) quotas. They also emphasised that all major decisions in the money field should be taken within the full membership of the Committee of Twenty, so that the interests of the entire international community are safeguarded.

The Group of 24 have also re-affirmed their commitment to the form of link between the allocation of SDRs and additional development finance, which they have already accepted, namely, direct distribution to them of a larger proportion of SDR allocations than they would receive on the basis of their share in Fund quotas to be used for developmental purposes. This would be apart from any increase that may result from raising their share in Fund quotas. They have agreed that any formula for distributing link resources among themselves should be such that all developing countries should benefit and the distribution would be relatively more favourable to the least developed countries.

It was also recognised by the Group that the attainment of the purposes of monetary reform depends also upon arrangements for international trade, capital, investment and development assistance including the access of developing countries to markets in developed countries; the principles which govern the international monetary reform and arrangements in these related areas must be consistent.

Addressing the Committee of Twenty, India's Finance Minister, Mr. Y.B. Chavan, stated that the developing countries had a vital stake in the smooth functioning of the international monetary system. 'From the Indian stand-point and indeed from the stand-point of the majority of mankind living in the developing countries, no reform can have much significance if it does not improve the international environment for their development'.

The draft outline of reform placed before the Committee of Twenty sought an explicit answer on the question of establishing a link between SDRs and development assistance. However, it did not cover matters relating to the reform of the quota structure and the decision-making process in the IMF, the Indian Minister expressed. Developing countries are happy that their legitimate right to full participation in the decision-making processes relating to international monetary reform has at long last been conceded. 'However, our insistence on participation has not been merely for the sake of having the satisfaction of sitting round a table along with the representatives of developed countries. Our faith in international economic cooperation can be sustained only if an historic occasion like the reform of the world monetary system is also used to redress some of the inequities of history which have condemned developing countries to a low level of development'.

As to the relative merits of the two alternative suggestions, India recognises that both suggestions deserve serious consideration. In a regime of convertibility, reserve indicators can be an important element in initiating adjustment. However, given the complexity of modern social and economic organisations it can not be believed that these indicators can be used in a quasi-auomatic manner to trigger off adjustment action. Changes in reserves have to be supplemented by an overall assessment of the country's position and prospects. As such, main reliance is to be placed on inducing corrective adjustment action on a general assessment. If there are proposals for combining the best features of the two alternatives, India would be willing to look at the compromise as it emerges.

In a search for improved working of the adjustment process, the potentialities offered by the link proposal in harmonising balance of payments objectives of developed countries should not be lost sight of. The draft outline recognises that "in surveying the world payments situation, important factors to be taken into consideration are the flow of real resources to developing countries and its financing". It would be necessary to go beyond this understanding and to provide for a built-in mechanism for transfer of adequate amounts of real resources to developing countries as a means of both improving the working of the adjustment process and achieving the objectives of international development strategy, said the Indian Minister.

On gold, Mr. Chavan said that India would agree with the view that its role in the international monetary system should be phased out. To that end, India would support the sale of gold by the monetary authorities on the private market. However, 'we are firmly opposed to a substantial rise in the official price of gold'.

When the Committee discussed the issue of the link, Mr. Chavan initiated the discussion by declaring that India was strongly in its favour. The link, in fact, had the unanimous support of all developing countries. It is unfortunate that some developed countries were opposed to it. The developing countries would welcome the statement by the Minister of Finance of France in support of a mechanism for increased transfer of real resources to developing countries. The introduction of a link would indeed not jeopardise the establishment of SDR-based system and it would not weaken confidence in the SDR. The fact that the SDR will be held only by the monetary authorities and not by private bankers is sufficient proof that the confidence problem was being unduly overplayed.

It has been arguedt hat SDR backed by the obligations of developing countries would not inspire confidence. However, even at present, the SDR is backed partly by the obligations of developing countries and nobody has so far suggested that it has weakened confidence in the SDR. 'On the contrary, we are all very keen to make the SDR the centre of the new monetary system'. Moreover, the fact that an asset backed by the obligations of developing countries need not necessarily be a weak asset is proved by the highest credit rating enjoyed by the World Bank bonds in financial markets. Although the bulk of World Bank loans go to developing countries, these markets have never questioned the credit-worthiness of World Bank bonds becuase of the backing provided by the uncalled capital of developed countries. In the same way, if developed countries are willing to accept the SDR in international settlements, the confidence problem will not arise at all.

The Minister strongly supported the creation of an extended Fund facility to provide longer-term balance of payments support to developing countries. However, the creation of such a facility would be a supplement and is no way a substitute for the link.

CAPACITY UTILISATION IN INDIAN INDUSTRIES

According to a recent study undertaken by the Directorate General of Technical Development in the Ministry of Industrial Development, Government of India, the production capacity in relation to installed capacity is maximum and even more than 100 per cent during 1972 in respect of forged hand tools, electric fans, dry batteries, transformers, electrical steel sheets, aluminium wire rods for A.C.S.R., T.V. receivers, conveying equipment, gas cylinders, electric measuring instruments, ball and roller bearings, zip fasteners, crown corks, hurricane lanterns, clocks, wood screws, uto leaf springs, ship building and repairs, aluminium ngots, zinc sheets and strips for printing industry, alcium carbide, pottassium carbonate, aluminium luoride, sodium perborate, bichromates, copper sulhate, phosphoric acid, sodium sulphate, acetic nhydride, polythylene H.D., synthetic rubber, beer nd ale, high and low density polyethylene, polyehylene films, pipes and tubings, P.V.C. sheets, phenolic aminates, leather cloth, linoleums, naphthols, glass hells, vacuum flasks, synthetic stones, S.W. pipes, iant tyres and tubes, car tyres and tubes, motorcycle nd scooter tubes, scooter tyres, areo tyres, A.D.V. yres and tubes, tractor tubes, off the road tyres, latex oam sponge, radiator hoses, vaccum brake hoses, ndustrial belts, rubber conveyor beltings, cotton eltings, newsprint, viscose filament yarn, acetate arn and acetate staple, nylon filament yarn, polyester taple fibre, tea chest plywood, cork sheets, matches, igarettes, soaps and synthetic detergents.

Among the industries that have achieved high capacity utilisation between 90 per cent and 100 per cent are grinding wheels, steel foils, twist drills, tungsten carbide tipped tools, broaches, electric motors, house service meters, seamless steel pipes and tubes, bright bars, antimony, aluminium rods, sections, pipes and tubes (extruded), aluminium foils, caustic soda, aluminium chloride, alumina ferric, ethyl acetate, rubber chemicals, U.F. synthetic resins, optical whitening agents, sheet glass, H.T. insulators, cellulose film, viscose tyrecord, cork discs, glycerine and tooth powder.

Among the industries that have registered capacity utilisation between 80 to 90 per cent are storage batteries, air conditioners, aluminium conductors, chemical and pharmaceuticel machinery, welding electrodes, copper, cement, paper and paper board, viscose staple fibre, nylon tyre cord and infant milk food.

The examples of those industries which have registered a capacity utilisation between 70 and 80 per cent are domestic refrigerators, radio receivers, automobiles, motorcycles, scooters, sugar mill machinery, oxygen gas, vitamins, hardboard and biscuits.

According to the DGTD, capacity utilisation up to the rate of 70 to 75 per cent might be considered optimum in most of the industrial sectors.

The engineering industries whose production has been below 50 per cent of installed capacity are : bare copper conductors, diesel engines, power driven pumps, cement mill machinery, drilling machinery, mining machinery, steel pipes and tubes, railway wagons, heavy structurals, cranes, light and medium structurals, steel castings, c.i. pipes, and tubes. Among chemical industries, the examples for which production has been below 50 per cent of installed capacity are refrigerant gases, solubilized wax, stablized azoics, aspirin, sacchrine, laboratory glasswares, contraceptives, pencils, nylon staple fibre, particle board and insulation board, zinc oxide and red lead.

The reasons offered by the DGTD for the low capacity utilisation are the closure of individual units for temporary periods such as in the case of diesel engines, setback in demand as in respect of nylon staple fibre, cement mill machinery, drilling machinery and laboratory glassware; paucity of raw materials as for example in the case of heavy structurals, light and medium structurals and power cuts and drought as for instance for power driven pumps.

The DGTD study has also indicated certain specific reasons for the low capacity utilisation in respect of selected industries. Let us take the instance of tea machinery. In this case, production mainly depends on the orders received. Also one of the units, M/s. Britannia Engineering Company has been under lock out since September 1970. The production of nylon staple fibre has commenced only recently (1972). Lack of sufficient demand due to high cost is reported to be the reason for the low capacity utilisation in this industry. The same reason is offered for the cement mill machinery also. But recently orders for number of complete cement plants have been placed on the indigenous manufacturers and it is hoped that its production will increase in the near future. There has been a lack of demand for drilling machinery and its capacity utilisation is expected to improve. Indeed, its production did show an increase in 1972 as compared to the preceding year.

In the case of zinc oxide, indigenous production is mainly based on the import of zinc metal. The import content of zinc oxide is nearly 90 per cent. Most of the industries using zinc oxide have, therefore, substituted its production with titanium dioxide. The import substitution effected has obviously reduced the rate of capacity utilisation for zinc oxide. For the railway wagons, the rate of production has recorded encouraging trends in 1972 as compared to the previous years as a result of the recent orders received. The extent of capacity utilisation in this industry is thus expected to improve in due course. The mining and coal washery sector has recorded capacity utillisation of only 33 per cent. But the industry has shown considerable improvement during 1972 due to the fact that M/s. Mining and Allied Machinery Corporation have shown a significant rise in the production. As for paper and pulp machinery, the capacity utilisation has shown a fall of 52 per cent because two additional units were set up during 1972 and these units did not commence production in that year.

LARGEST INDIAN DREDGER

The largest indigenous dredger now under construction at the Garden Reach Workshops in Calcutta, a Defence Undertaking, has been launched.

The dredger has been built for the Cochin Port Trust and is over 91 metres long with a hopper of 2,500 cubic metre capacity. It is fitted with two diesel engines, also manufactured by the Marine Diesel Plant of Garden Reach Workshops.

The dredger costs Rs. 24.3 million. Its indigenous content is 75 per cent. It is to be used for dredging the outer channel of Cochin Harbour.

The 3500 tonne dredger, H.S.D. Cochin, has been recently launched.

INDIA AT THE PARIS AIR SHOW

M/s. Hindustan Aeronautics Limited, one of the recent entrants in the world aviation industry has participated in the Paris air show for the first time this year. To let the aviation world know, how far India has progressed in this fast developing technology, HAL displayed in its well-laid-out stall the rather complicated aircraft and helicopter components produced by different divisions of the company.

Also displayed were scale models of the indigenously designed and produced HF-24 Marut fighter and HJT-16, Kiran basic jet trainer, as well as HA-31 Basant agricultural sprayer, Gnat multi-role fighter and Alouette III and Cheetah helicopters produced under licence.

Representatives of many manufacturers from various countries, including the U.S.A., Canada, Australia, West Germany, Sweden, the Netherlands and Israel had shown keen interest in Indian exhibits. Some of them expressed hope that India would further develop its collaborative efforts in the field of aviation, by participating in joint multi-national projects.

Since participating in the Farnborough air show last year, HAL has been making vigorous efforts to promote exports. It is exploring the possibilities of manufacturing components to customers' specifications. The Indian manufacturer already exports body structures of Alouette helicopter frames to France and blades of Orpheus jet engines to the U.K.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

DRY FARMING RESEARCH IN INDIA

Out of the total geographical area of India which stands at about 327 million hectares, 194 million hectares are cultivated. Of the total cultivated area, about 42 per cent is irrigated and the blance is rain-fed. Thus on about 101 million hectares of India's farm land, agricultural fortunes are closely linked with vagaries of the monsoon. These are the dry land areas. Yet these dry lands contribute 42 per cent of the Nation's food production in years when the monsoon is good. Paradoxically, industrial crops like cotton and oilseeds are grown mainly on dry lands.

Dry farming is a system of producing crops under conditions of low rainfall through efficient management and utilisation of rainwater. Thus the term dry farming may apear to be a misnomer as it does not imply farming without water. Since the system is essentially based on the conservation of rainwater, its efficient use, it is preferred to be called in some quarters, as 'conservation farming'.

As many as 24 dry land farming projects have been established throughout India under a centrally sponsored programme.

Although the attempts at solving the dry land prolem through research date back to 1923, the research fforts were actually intensified in 1960s and the introuction of high-yielding crops gave it a new dimension hrough the dry land agricultural research.

Dry land research has today spread out in India i several directions-crop, soil and water management re receiving ample attention for optimising yields. A ationwide coordinated dry land research programme nder the aegis of the Indian Council of Agricultural esearch is being vigorously implemented.

Domestic research findings have particularly helped aving the drought prone areas of the country. The reative efficiency of different crops for the dryland areas orked out of experimentation is an example. In North ndia, for example, research has shown that the more fficient dryland crops that can be grown are mustard, arley, safflower and linseed. Safflower and lineseed eem the best for the Eastern India. In the Deccan lateau sorghum, safflower and cotton have proved to e the staple crops.

The basic principle behind the selection of crops s to choose dwarf varieties which are of short duration, leep rooted and high-yielding. Advancing the date of owing crops in the drylands seems a counter-trick on rratic monsoon. This has been found true of rabi (summer) and kharif (winter) crops. What research as suggested is that farmers should sow certain crops n anticipation of the monsoon and not wait till it rrives. Advancing the date of sowing sorghum, for nstance, is expected to give an additional yield at about 70 per cent over the normal October sowings. Moisture conditions and not tradition, should thus decide the sowing date, according to the research findings.

Another important finding pertains to fertiliser use in dry lands, a practice which was considered undesirable at one time. Optimum doses of various plant nutrients, particularly nitrogen are being identified to get maximum yields.

If the total rainfall is much too small to be effective, even if all of it is conserved on the land, the research findings in India have found the example of Israel worth following. The method established is to collect the precipitation on a large area as runoff and allow it to soak into a limited area. New ways of harnessing rainwater that goes as runoff on any land, cropped or barren, are now available at low cost with locally available materials. Similarly, losses by infilteration or evaporation from storage surface tanks can also be stopped by sealing the bottoms of the tanks with a suitable mixture of bentonic clay with sodium fluoride and sodium carbonate. Evaporation losses from surface areas can also be reduced to a great extent by digging small tanks to store runoff water, the surface of which is covered entirely with cheap floating frames made of polythene sheets or palmleaf mats. These are a few examples of how dry land farming in India is receiving the attention of soil physicists, agronomists, engineers, plant breeders and economists.

DEVELOPMENT OF APPARATUS FOR ESSENTIAL OIL DISTILLATION

A simple apparatus has been recently designed by the National Botanic Gardens, Lucknow for the small scale manufacture of 'attars' (perfumes) and perfumed waters such as rose, aniseed and fennel. Attars are used in the production of superior cosmetics, perfumes and other toiletry.

The novelty of the apparatus designed by the Botanic Gardens of Lucknow relates to the fact that all the vapours in the apparatus get fully condensed within the condensor itself and thus the quality of oil and perfumed water so obtained is far superior to that secured from ordinary equipment. Conventionally, a technique has been in use for water distillation of flowers and seeds by overheating of the plant material leading to deterioration in quality of the resultant products. The new apparatus is so constructed that the separation of oil and the collection of the perfumed water is automatic. Its double cooling system facilitates proper condensation of vapours and the quality of oil obtained through distillation meets the standards laid down by the Indian Standards Institute (ISI).

Especially suited for the small-scale manufacturers of attar and perfumed water, this handy device can be made of glass or stainless steel. The distillation apparatus can be fabricated of different capacities according to the requirements.

GUM FROM CASHEW NUT SHELL

A process to manufacture water soluable polysaccharide (CNS Gum) from cashew nut shell has been developed by the National Chemical Laboratory (NCL), Poona, recently.

India as a principal cashewnut processing country, processes about 250,000 tons of raw nuts annually and as such, has outer shells of cashew nuts in abundance. Of the total weight of raw nuts, about 70 per cent accounts for outer shells. At present, outer shells are treated as a waste material and are in use mainly as a fuel in the cashew shell factories.

The CNS Gum which has been developed from these shells is a highly water soluble, colourless, non-toxic, free flowing powder which possesses good thickening properties. It can be used as a thickening agent for ice cream, binder for tablets in pharmaceutical industry, drilling muds in mining industry and also can be used for the manufacture of rare chemicals such as, D Galactose mucic acid. Currently, products such as carboxymethyl cellulose, high grade gum arabic and sodium algniate are used in different applications mentioned above.

The process involves extracting the gum from cashew nut shells with water, concentrating the extract to a small volume, removing the impurities and precipitating the gum with a suitable solvent and filtering and drying the gum.

The main raw materials required in the process are : cashew nut shells, barium hydroxide, ethanol and hydrochloride acid. All these are available indigenously.

The items of plant and machinery required include wooden vats, evaporation unit, alcohol distillation unit, filter press, vacuum pump, centrifugal pump, drier, storage vessels and boiler. These can be fabricated indigenously. The process has been developed on one kg. scale of CSN Gum. Testing with regard to non-toxicity and thickening properties have been carried out by the Central Drug Research Institute, Lucknow and by the Central Food Technological Research Institute (CFTRI), Mysore respectively.

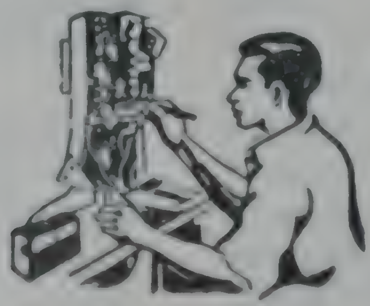
The terms and conditions for release of the process can be had from the Secretary, National Research Development Corporation (NRDC), 61, Ring Road, Lajpat Nagar, New Delhi 24.

SUBSTITUTE FOR CANADA BALSAM

National Botanic Gardens, Lucknow has developed a substitute for Canada balsam which is used for making permanent slides of botanical, zoological and geological materials for microscopic examination. At present, the product is being imported from France, Netherlands, U.K. and U.S.A. The present annual demand of the product is estimated at 2,000 kgs. and it is likely to increase to 4,000 kgs. a year soon.

The process has been developed at laboratory scale and about 5 kgs. of the product has been prepared. In the process developed by National Botanic Gardens, the crude resin is extracted by the solvent and then concentrated. The product thus developed, has been tested and found suitable.

Raw materials required for the process are available indigenously. Simple equipment which are required can also be fabricated indigenously.



PRODUCTION TRENDS IN SELECTED INDUSTRIES

(Value in Rupees Million)

Industry	Unit	PRODUCTION			
		1971		1972	
		Quantity	Value	Quantity	Value
Ball and Roller Bearings	Million Numbers	18.85	240.00	21.65	266.00
Calculating and Data Processing Machines	Numbers	14,640	51.20	12,700	40.00
Sewing Machines	Numbers	330	45.00	315	46.90
Bicycles & Bicycle Parts	—	—	406.50	—	525.00
Railway Wagons	Numbers in terms of 4 Wheelers	8,010	170.00	9,720	253.20
Steel Wire Ropes	Tonnes	19,670	81.00	20,000	92.30
Steel Pipes & Tubes	Tennes	285	644.00	370	869.40
Welding Electrodes	Million Running Metres	331.10	120.00	390.00	182.40
Bright Bars	Tonnes	51,740	82.00	56,000	105.40
Commercial Vehicles	—	—	2939.45	—	3132.25
Automobile Ancillaries	—	—	1202.30	—	1245.00
Agricultural Tractors	Number	16,545	293.65	18,300	366.60
Diesel Engines (other than Vehicular)	—	—	326.35	—	352.45
Power Driven Pumps	Numbers	244,590	159.45	278,000	172.00
Sugar Mill Machinery	—	—	166.00	—	197.70
Cement Mill Machinery	—	—	38.00	—	21.40
Boilers	—	—	390.00	—	571.50
Cables & Wires	—	—	1434.10	—	1696.10
Electric Motors	Million H.P.	2.60	318.10	2.74	409.90
Storage Batteries and Dry Cells	Million Numbers	581.05	464.45	620.60	555.55
Electric Lamps	Million Numbers	160.50	226.10	181.35	235.30
Air Conditioning and Refrigeration both Domestic and Industrial)	—	—	350.00	—	378.40
Electric Fans	Million Numbers	1.95	368.60	2.50	435.50
Transformers	Million KVA	10.15	437.10	11.31	403.95
Aluminium	Million Tonnes	0.18	609.20	0.18	714.60
Copper	Tonnes	95.55	98.70	102.64	106.00
Steel Forgings and Steel Castings	Million Tonnes	0.60	630.00	0.12	740.55
Leather Footwear	Million Pairs	16.00	184.20	15.50	173.15
Paper & Paper Products	—	—	1930.00	—	2210.00
Refractories	Million Tonnes	0.80	404.00	0.81	422.00
Glass & Glassware	—	—	370.00	—	401.50
Cement	Million Tonnes	1495.00	1493.00	1575.00	1577.00

Source : Directorate General of Technical Development, Ministry of Industrial Development, Government of India, New Delhi.

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SPOTLIGHT ON TRANSFORMER INDUSTRY

Included in the priority sector, India's transformer industry has come of age. In fact, the country's electrical equipment industry owes greatly to the transfarmer industry for its rapid development. Transformers in a variety of specifications and ratings, currently being manufactured in the country, have revolutionised the entire industrial sector of the country. With a beginning on a modest scale in the Thirties, the industry grew rapidly over the years.

The organised sector of the transformer industry, at present, comprises 29 units in its infrastructure and their combined installed capacity is of the order of 9.26 million KVA. Actual production of the industry was of the order of 10.15 million KVA in 1971 and it rose to 11.3 million KVA in 1972. Alongside the increase in production, diversification in the range of transformers was progressively achieved by the industry. The range of production broadly includes power transformers such as generator transformers (for high voltages), system transformers (for stepping down high voltages) and distribution transformers. All these are manufactured in a variety of ratings. With an objective to meet the growing volume of demand, particularly for electric power transformers of high ratings, these are being manufactured on comparatively larger scale as compared to the others. Transformers up to 400 KV are also being manufactured by the industry. During the second Five Year Plan, production of transformers gone up at a high speed because of the electrification plans at rural and urban levels as also to feed power to a large number of industrial plants in the public and private sectors.

Further development of the industry depends upon the growth of power generating capacity of the country. During 1960-61, about 16.9 billion KWH electricity was generated. In 1970-71, it reached a level of 55.8 billion KWH and by 1971-72 it increared to 60.7 billion KWH. A 10 per cent annual growth rate with 40 million KW additional installed generating capacity corresponds to approximately 40 million kv. of transformer output per annum or nearly twice the aggrgate output of the last 15 years. The industry has to undertake tremendous task to equip itself with an additional capacity so as to cope with the requirements of transmitting the additional 17.7 mw of power proposed for generation during 1972-77. It was estimated that it would be necessary to add further 20,400 units of circuit lines - 8700 units of 110/132 kv., 8100 units of 220 kv. and 3600 units of 400 kv.

A major importer of transformers a few decades back, India is now an exporter of quality transformers. Today, the industry is in a position to offer a broad range of transformers to the markets world over. During 1971-72, the industry fetched foreign exchange to the tune of over Rs. 16.52 million as against Rs. 9.30 million in 1970-71.

The export range covers transformers of various ratings such as, 37.5 KV (rating upto 5000 KVA), above 37.5 to 66 KV (rating above 10000 KVA), 37.5 KV (rating above 5000 to 10,000 KVA), above 37.5 KV to 60 KV (rating upto 3000 KVA), above 66 to 132 KV (rating upto 3000 KVA), above 66 to 132 KV (rating 5,000 to 10,000 KVA) and above 66 to 132 (rating above 10,000 KVA). During 1971-72, Malaysia was the biggest buyer having bought worth Rs. 4.60 million, followed by Sri Lanka at Rs. 2 18 million, Guyana at Rs. 2 million, Tanzania at Rs. 1.39 million and Thailand at Rs. 0.90 million. Burma, Singapore, Sudan, Uganda and Zambia were among other buyers.

Efforts at import substitution have yielded good results in the transformer industry while the foreign exchange outgo on account of their imports was valued at Rs. 36.3 million in 1971, it came down to only Rs. 15.2 million in the year that followed.

Significantly, transformer industry provides an example in which the extent of capacity utilization is more than optimum. The percentage utilization of of the installed capacity in the industry was as high as 117 per cent in 1972. ☐

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DA'S CONTRIBUTION TO XPORT TRADE

The Trade Development Authority, 16 Parliament treet, New Delhi, has succeeded in securing export rders worth Rs. 345 million for its clients during 972-73 as against a target of Rs. 338 million set r the year. The principal products for which the rders were booked were bicycles and components, eadymade garments, ferrous castings and forgings, lectrical equipment and components, automobile ncillaries, handtools and small tools, fencing comonents and sports goods.

The Authority has the basic objective of romoting exports of specific groups of manufactures o the highly competitive markets of Western Europe ncluding the U.K., the U.S.A., and Japan. The pecific groups of products taken up for export developnent by the Authority are electronic equipment and omponents, sewing machines, bicycles, automobile ncillaries, industrial fasteners, ferrous casting and orgings for industrial application, stainless steel cutlery, hermoplastic and thermosetting plastic goods, small tools and handtools, instruments for industrial, laboratory, hospital and educational use, processed fruits, juices and vegetable products, wooden furniture including dimension stocks for CKD furniture, leather goods and garments; selected consumer goods such as readymade garments, home furnishings, knit-wear, christmas and other decorative light sets, selected handicrafts, sports goods, locks and padlocks and agarbattis (perfumed incense sticks).

TDA has a select group of manufacturing and exporting units as its clientele. These units represent the elite of India's exporting community and are capable of meeting stringent requirements of buyers.

TDA is also engaged in the task of promoting new products, location of new buyers and product adaptation. As a result of crash programme for export of a selected range of products to the U.S. market, orders worth Rs. 226 million were booked by the Authority's clients during the year 1972-73 as against the target of Rs. 227 million. The Authority has also been assisting the Indian Government in the formulation of Commercial Development Programmes with the Federal Republic of Germany, Italy, Switzerland, Denmark, Norway, France, Belgium, Sweden and Canada.

In the field of product development and adaptation, the TDA has under taken quite a few projects such as those relating to the indigenous manufacture of 3-speed hubs for SLR bicycles and setting up of export oriented joint ventures for the manufacture of sewing machines.

The TDA sponsored export processing zone near Santa Cruz Airport in Bombay has already made some headway. The zone is expected to lead to a substantial expansion in India's exports of electronics.

TDA's participation in the Third Asian International Trade Fair at the end of 1972 generated export orders worth Rs. 26 million.

BUILDING AND CONSTRUCTION EQUIPMENT FOR EXPORT

A wide range of products turned out by the building and construction machinery industries have come to contribute to India's export trade. For instance, hoisting and lifting machines including cranes are estimated to have secured about Rs. 6 million during the first ten months of 1972-73. The export earning was only Rs. 3 million in the corresponding period of the preceding year.

M/s. Sayaji Iron and Engineering Co. (Private) Limited, Channi Road, Baroda, have recently succeeded in finalizing an export order valued at Rs. 2.4 million for the supply of a portable stone crushing plant of 100 tonnes per hour capacity to Indonesia. The firm has secured the order through M/s. Tata Exports Limited, Bombay. The Baroda firm has been primarily concentrating on the export of complete stone crushing plants on turnkey basis, and the plant being supplied to Indonesia is reported to be the biggest portable crushing and screening plant ever exported from India. During 1972-73, the firm's total export earning was of the order of Rs. 3 million, excelling its total export performance during the preceding year. The firm has already booked orders worth Rs. 3.5 million in the current year. Their overseas supplies are directed mainly to Afghanistan, Iraq, Nepal, Indonesia, Mauritius and Fiji Islands.

Besides direct exports, M/s. Sayaji have a record of import saving and substitution. It has saved foreign exchange by designing and manufacturing equipment which would otherwise be imported. They were, for instance, instrumental in saving foreign exchange outgo of over Rs. 5 million by supplying 20 Transit Mixers against a global tender to Beas Sutlej Link Project under IDA programme, 5 Pan Mills to Bokaro and Bhilai Steel Plants and counter current flow-Mixers to several refractories in the country.

The varied product range of the Baroda firm comprises construction, road making, quarry and material handling equipment. The construction

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quipment manufactured by it includes Roller Pan Mixer 1350 Pan dia, and concrete mixers of various ypes such as Drum Type Concrete mixers ranging from 80 litres to 700 litres mixed capacities, portable/tationary cylindrical type batch/continuous, tilting ype concrete mixers of 60 cu. m. per hour and under apacities, transit concrete mixers of 3 and 4.5 cu. m. nd concrete Batching Plants with capacities 22 cu. n/hour and over. The road construction equipment produced by the firm includes Hot Mix Asphalt Plants of various range, road rollers 8/10 ton dead weight ype and asphalt paver finishers. In the category of quarry and mining equipment, the firm is producing Jaw Crushers in various sizes, cone crushers upto 1200 mm. dia and over, double roll crushers of all sizes, coke cutters, portable crushing, screening and stacking plants, vibrating screens, and crushing equipment. Material handling equipment manufactured by them include electric hoist, special high lift hoists for steel plants and heavy fabrication shops, cranes portable automatic survelling loader of 45 tonnes per hour capacity, stack piler of 50 tonnes per hour capacity and apron feeders of various capacities.

In addition, Sayaji are also manufacturing special equipment like pan grinding mills for refractory materials, special mixers for glass industry, rotary dyers and coolers, and steel plant equipment such as ladles and slag cars.

India's building and road construction machinery industry has a licensed capacity of Rs. 100 million per annum. With an installed capacity of about Rs. 72 million, the output during 1971 was of the order of over Rs. 15 million. The industry can today manufacture a variety of machinery such as concrete mixers, vibrators, hot mix plants, tar boilers, crushers and granulators, pre-stressed concrete equipment, asphalt mixers, paver finishers and pile driving equipment.

The earth moving machinery and construction equipment is, however, a more established line of manufacture, capable of producing complex products like road rollers, excavators, shovels draglines, mobile cranes. crawler tractors, dumpers, scrappers, motor graders, wheeled loaders and fork lift trucks. All these industries are listed in the priority industries in India as they find application in important sectors such as irrigation and power projects, road development and construction, mining, material handling and air-fields.

EXPORT ORDER FOR POWER TRANSFORMERS

Power transformers occupy a prominent place among electrical power machinery and switchgear exported abroad. They fetched Rs. 16.5 million during 1971-72 out of the total exports worth Rs. 48 million of the electrical power machinery and switchgear during the year.

During the first nine months of 1972-73 (April-December 1972), the export value of transformers amounted to Rs. 11.55 million while their parts and accessories accounted for another Rs. 4.55 million. Transformers upto 37.5 KV (rating upto 3000 KVA) with an export earning of Rs. 8 60 million during the period constituted the main category of export. Transformers above 37.5 to 66 KV (rating about 100 KVA) was the other important category which fetched Rs. 1 million in foreign exchange. The export earning of other important types of transformers was : transformers upto 37.5 KV (rating upto 3000 to 5000 KVA) Rs. 0 97 million; transformers upto 37.5 KV (rating 5000 to 10000 KVA) Rs. 0.30 million and transformers above 132 KV (rating above 10000 KVA) Rs. 0.23 million. Exports were directed mainly to Malaysia, Tanzania, Malawi, Zambia, Iraq, Guyana and Kenya.

Adding to the export effort, one of the manufacturers in the line, M/s. Voltamp Transformers Private Limited, Bavla, Ahmedabad are executing orders for supply of their transformers to Thailand and Sri Lanka. The Thailand order relates to supply of 145 transformers valued at about Rs. 850,000 to the Provincial Electricity Authority, Bangkok (Thailand). The transformers to be supplied by the firm include those of 50 KVA, 100 KVA and 160 KVA. The other order has been placed on the firm by the Electricity Board, Colombo (Sri Lanka). It provides for supply of 50 transformers of 250 KVA (33000 volts) for a total value of Rs. 475,000.

Initially the firm was producing only air cooled L.T. Transformers. Today with its two factories at Jambura near Baroda and the other at Laxmibinagar Industrial Estate, Fort, Indore, the firm's manufacturing range includes Distribution and Power Transformers upto 20 MVA, 132 KV, welding transformers, furnace transformers, transformer oil filters, battery chargers, battery eliminators, pressed radiators for transformers, pressure vessels and industrial electronic products. Their products conform to relevant ISI (Indian Standards Institution) specifications. The firm has a team of qualified engineers for organising Research and Development activities.

India's installed capacity for transformers is in the range of 9.26 million KVA in the organised sector. In 1972, actual production of 29 units engaged in the line was estimated at 10.8 million KVA.

OVERSEAS SUPPLY OF ELECTRIC MOTORS

Overseas supply of electric motors amounted to Rs. 9.50 million during 1971-72. The main category of export was of A.C. squirrel cage induction motors (3 phase) of 20 to 50 HP which secured Rs. 3.63 million. The A.C. squirrel cage induction motor (3 phase) of 1 to 20 HP with an export earning of Rs. 2.78 million in the year was the other important variety popular abroad. German Federal Republic, Switzerland, Sudan, Philippines and Arab Republic of Egypt were the prominent buyers for these varieties. In the first three quarters of 1972-73, the export value of electric motors was Rs. 5.48 million.

One of the manufacturers in the line, M/s. Bomin Private Limited, Odhav, Ahmedabad, exported 158 electric motors and 78 pumps valued at Rs. 67,760 to Abu Dhabi. The performance, though limited, is significant, considering that in 1971 the firm exported only 2 motors at a value of Rs. 1500. Earlier in 1970, their exports were limited to Rs. 8,400.

The total annual sales of the Ahmedabad firm, both for domestic and export markets, have reached a level of Rs. 7 million in 1972. For 1973, the total sales target is placed at Rs. 10 million.

Sold under the brand name 'Everest', the products of the firm cover a wide range which include single phase motors from 0.5 HP to 2 HP, 3 phase motors from 0.5 HP to 75 HP, textile drive special motors, monoblock pumping sets from 1¼" × 1" to 4" × 4" with suitable electric motors, and oil engines from 6/7 HP to 10 HP. All the products manufactured by the firm pass through rigid quality control tests. The frame dimensions are selected according to International Standards to provide interchangeability with motors manufactured by reputed firms abroad.

In 1972, India's production of electric motors (33 units in the organised sector) was of the order of 2 million H.P. while the installed capacity was 3 million H.P.

EXPORT TRADE IN CIGARETTES

India's cigarette industry in the organised sector has 13 units in its infra-structure. During 1972, production of cigarettes by these units was of the order of 61,000 million pieces as against the installed capacity of 57,690 million pieces.

Alongside the progress in the manufacture, cigarette Industry is achieving rapid strides in the export field also. From a meagre amount of Rs. 0.26 million in 1969-70, the industry stepped up its export earning to the tune of Rs. 15.70 million in 1971-72. During the first three quarters of 1972-73 (April-December 1972), the exports fetched Rs. 16.45 million which even outstripped the foreign exchang earning of the entire preceding year. The quantum of cigarettes exported was 1.05 million kgs. during the period reviewed of 1972-73 as against 1.18 million kgs. during the entire preceding year. This represents improvement in the unit value of the exports.

USSR is the largest market of Indian cigarettes which bought worth over Rs. 16 million even during April-December 1972 as compared to nearly Rs. 15 million during 1971-72. Hungary stands as the next best market, followed by Saudi Arabia, Mauritius and Sri Lanka.

M/s. Godfrey Phillips India Limited, Chakala, Andheri, Bombay, one of the cigarette manufacturers secured export orders valued at Rs. 5 million during the year ended January 1973. The firm stepped up its exports from a level of Rs. 4 million in the preceding year. Its cigarettes are particularly popular in U.S.S.R.

The Bombay firm has an installed capacity to produce 5400 million cigarettes per year. Its production was of the order of 4860 million cigarettes during the year ended December 1972.

India's exports of tobacco and tobacco manufactures totalled Rs. 527 million during the first 3 quarters of 1972-73. During the same period of the preceding year, the exports were of the order of nearly Rs. 370 million.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT TRADE IN FROGLEGS

World demand for Indian froglegs is on the rise. In the year 1971-72, the export value totalled Rs. 12.5 million while even in the first three quarters of 1972-73 (April-December 1972,) it improved to Rs. 19 million. The major customers were the U.S.A., France, Belgium and Netherlands.

Although several species of edible frogs are available in India, most common species caught are the bull frog - *Rana Tigrins* and *Rana Hexadactyla*. In the interest of conserving the frog wealth in India, the export of live frogs is allowed on merits.

While live frog exports are negligible, India's major export line is of frozen froglegs. In fact, the country has emerged as one of the leading suppliers of this variety to the world markets. Frogs are caught at night and delivered in the morning to the processing factories. They are cut and quickly frozen for export. Only the pair of hind legs are used for freezing and are graded according to the size and colour. The Government of India have laid down stringent quality standards for frozen froglegs and a scheme for compulsory quality control and preshipment inspection is in force since March, 1966. Also the Indian Government have banned the export of froglegs of counts smaller than 80 per kg; the count is the number of pairs of froglegs per kg. Further, to discourage the catch of frogs during the breeding season, a ban has been imposed on their processing during mid-June to mid-August every year.

In 1971-72, the export quantum of frozen froglegs amounted to 1310 tonnes as compared to 2400 tonnes (Rs. 29.5 million) in the preceding year. During the first three quarters of 1972-73, the quantum exported was about 1550 tonnes (Rs. 19 million). The major markets during 1971-72 were U.S.A. and France followed by Belgium, Bulgaria, Switzerland and Canada. In the first three quarters of 1972-73, the U.S. market has considerably increased its offtake to the tune of Rs. 13.2 million as against only Rs. 8 million in the entire period of 1971-72. Netherlands which was a negligible importer also emerged as an important customer and has absorbed as much as Rs. 1 million worth in the first three quarters of 1972-73. In the same period, the purchases of France were worth Rs. 4.2 million as against Rs. 3 million in the entire preceding year.

S.T.C's CONTRIBUTION TO PHARMACEUTICAL EXPORTS

The State Trading Corporation of India has entered into collaboration agreements with three of India's pharmaceutical companies for exporting their products. The companies are M/s. Tablets India, Madras; M/s. Deltakem Pharmaceuticals Ltd., Bombay and M/s. Indian Herbs, Research and Supply Co., Saharanpur. The finished formulations manufactured by these companies are expectorants, analgesics and antipyretics, multivitamins, anti-T.B. drugs and anti-diabetics.

The Corporation has been participating against global tenders for the supply of drugs and pharmaceuticals on behalf of a consortium of Indian manufacturers. Orders valued at Rs. 0.5 million in 1971-72 and about Rs. 1 million in 1972-73 were received from developing markets like Sudan, Kenya, Mauritius, Iraq, Bangladesh and Sri Lanka. The orders secured by STC during 1971-72 were executed and those received by the consortium for the year 1972-73 are yet to be executed.

The STC is also associating with the Basic Chemicals, Pharmaceuticals and Soaps Export Promotion Council (Bombay) in promotion of exports of drugs and pharmaceuticals in South East Asian countries.

India's total exports of medicinal and pharmaceutical products rose from Rs. 60 million in 1969-70 to Rs. 84.6 million in 1970-71 and Rs. 87 million in 1971-72. In the first three quarters of 1972-73, the exports totalled Rs. 69 million.

SPECIFIC PRODUCTS OF EXPORT POTENTIAL TO JAPAN

The New Delhi branch of the Japan External Trade Organisation (JETRO), the official trade promotion agency of Japan, has recently sought from the Indian Government a list of selected priority items, both primary and manufactured, which should be of export interest from India to Japan. Accordingly a list of about 20 items in engineering goods and 10 items in primary products was supplied.

In the primary products group, the items listed include marine products, certain varieties of spices, oil cakes, manufactured tobacco, cashew kernels and cashew shell oil, H.P.S. groundnuts, coir and coir products, tea, cardamom, coffee and unworked mica.

Among the engineering items the products included handtools, bicycle components, forgings and castings, cutlery, surgical instruments, electronic equipment including P.A. equipment car radios, electronic valves and semi-conductors, electronic desk calculators and components, machine tools and accessories, builders' hardware, sanitaryware and fittings, industrial valves, auto-components, non-aircraft internal combustion engines, switchgears, insulated wires and cables, and electrical condensers.

In addition, the Indian Government have also suggested certain manufactured (non-engineering) products such as worked mica, jute products, cotton apparel, silk fabrics, woollen fabrics, drugs and pharmaceuticals, dyes and dye intermediates, agarbattis, essential oils, indigenous drugs, crushed bones and horn meal, modern furniture, vacuum flasks, cut and polished diamonds, leather products, footwear and travel goods.

TOBACCO EXPORTS IMPROVE

During the first half of 1973 (January-June, '73), the export of unmanufactured tobacco is estimated to be around 43.6 million kg. valued at Rs. 385.8 million. In the same period of 1972, the exports were 38.2 million kg. for a value of Rs. 326 million.

The major markets for tobacco during the first half of 1973 were U.K.,. U.S.S.R., Bangladesh, Japan, and Irish Republic. The U.K. market absorbed in this period as much as 14.3 million kg. at a value of Rs. 184.4 million as against 9.7 million kg. at a value of Rs. 106 million in the corresponding period of 1972. Besides U.K., the Irish Republic also showed increase in her purchases in 1973. The Soviet Union which is now the chief market in Eastern Europe curtailed her purchases in 1973. The export of 7.3 million kg. to that market meant a reduction from 14.5 million kg. effected during the first half of 1972. In terms of value, the U.S.S.R. market absorbed as much as Rs. 124 million in the first half of 1972 and only Rs. 68.8 million in the same period of 1973.

Bangladesh made her entry into the market a year before and has considerably increased its purchases to a near 12 million kg. which fetched Rs. 53. 5 million.

FEATURE FILMS AND EXPORT TRADE

Feature films produced in India are in wide spread demand abroad. India's export earning from feature films amounted to Rs. 38.38 million during the first nine months of 1972-73 (April-December 1972) while in the entire preceding year (1971-72) the export value was Rs. 47.91 million. The export value has risen to this level from Rs. 31 million in 1964-65.

During April-December 1972, UK was the major destination for Indian feature films. It bought 1.35 million metres valued at Rs. 10.55 million. During 1971-72, it purchased 0.25 million metres worth Rs 9.27 million. Next to United Kingdom, Singapore was the second important market which imported 0.79 million netres at a value of Rs. 3.86 million as against 1.14 nillion metres worth Rs. 5.45 million (1971-72). Dubai vas yet another significant buyer which absorbed 0.33 nillion metres at Rs. 3.40 million.

Among other buyers, Nigeria purchased worth Rs. 1.96 million, Kenya Rs. 1.80 million, Mauritius Rs. 1.41 million, Indonesia Rs. 1.27 million, Lebanon Rs. 1.25 million, Fiji Islands Rs. 1.23 million and Morocco Rs. 0.91 million.

DIAMONDS EARN MORE

As compared to Rs. 367.40 million worth of exports effected during the year 1971-72, the first nine months of the following year (April-December 1972) witnessed a sizeable increase in exports of diamonds (except industrial, not set or stung) at a value of over Rs. 441.40 million. In terms of percentage, the increase was of the order of about 20 per cent.

Of the total exports during April-December 1972, cut diamonds alone fetched the bulk of foreign exchange, equivalent to Rs. 423.10 million, registering a sharp increase over the export earning of the full year of 1971-72 at Rs. 362 million. The exports of uncut diamonds too registered more than three-fold increase during the period under review of 1971-72 as compared to their export value in 1971-72. They brought in Rs. 18.30 million as against Rs. 5.40 million.

For cut diamonds, Belgium, as in the preceding year, topped the list of buying countries during the period reviewed (1972-73). It bought worth nearly Rs. 101 million which is equal to its intake during full year of 1971-72 (Rs. 101.30 million). U.S.A. emerged as the second important destination which purchased worth Rs. 94.85 million as against only Rs. 58 million in 1971-72. Hong Kong, the next best market imported worth Rs. 76.95 million as compared to Rs. 78 million while Japan absorbed worth Rs. 42.15 million as compared to Rs. 29.90 million. U.K., Switzerland, Spain, Israel, Singapore, France and Australia were the other significant buyers.

For uncut diamonds too, Belgium was the leading destination having purchased worth Rs. 5.23 million. Hong Kong was the second best destination which imported worth Rs. 3.28 million, followed by U.K. at Rs. 2.15 million, Netherlands Rs. 1.60 million and Israel Rs. 0.63 million.

TRADE POSITION WITH BANGLADESH

While India's export trade with Bangladesh totalled Rs. 598 million, its imports from that country were of the order of Rs. 16.4 million in the first three quarters of 1972-73 (April-December 1972). The Indian exports to Bangladesh in the period excluded substantial exports (approximately Rs. 380 million) for which commoditywise break up is not available. A brief study of the commoditywise break up of Indian exports to Bangladesh in the above period would indicate that the supply of wheat was prominent at about Rs. 222.8 million. Next in importance was the supply of raw cotton (excluding inter sweepings) at Rs. 75 million. Cotton yarn and thread was exported to the tune of Rs. 26.8 million, unmanufactured tobacco Rs. 34.7 million, portland grey cement Rs. 21.2 million, handloom cotton piecegoods Rs. 19 million, millmade cotton piecegoods Rs. 15.8 million, road motor vehicles Rs. 19 million, medicinal and pharmaceutical products Rs. 62 million, paper and paper board Rs. 56 million and cotton waste Rs. 5.2 million. The list of imports from Bangladesh during this period included Rs. 5.7 million worth of raw jute, Rs. 3.3 million worth of paper and paper board and fresh fish at a value of Rs. 1.3 million.

In early July this year, a new trade agreement between India and Bangladesh was concluded and the agreement is to come into force from September 28, 1973, when the existing trade agreement will have expired. The new agreement will be valid for a period of three years in the first instance. Under the new agreement there will be two tiers of trade, namely, balanced trade and payments arrangement in commodities of special interest to the two countries and trade outside the balance Trade and Payments Arrangement would be regulated in accordance with the normal regulations of external trade and foreign exchange.

EXPORT TRADE IN JUTE MANUFACTURES

Indian exports of jute manufactures amounted to Rs. 2500 million during 1972-73. In terms of quantity, the exports totalled 1.21 million tonnes in the year.

The jute industry occupies an important place in India's economy contributing over Rs. 2000 million in foreign exchange every year on an average. In the economy of the State of West Bengal, particularly, the industry has a unique position. Two persons in that State out of every five owe their living to jute. The jute mills employ roughly a sixth of West Bengal's organised industrial labour. The industry employs more than 207,000 persons and the investment in the produtive capital is more than Rs. 870 million. The present production capacity of the industry is estimated at about 1.25 million to 1.3 million tonnes per annum.

Out of a total production of 1.21 million tonnes in 1972-73, the share of hessian was of the order of 350,000 tonnes while that of carpet backing was 182,000 tonnes and sacking 526,000 tonnes.

Of the total exports in 1972-73, estimated at 585,000 tonnes, the hessian contributed 270,000 tonnes, carpet backing 160,000 tonnes and sacking 85,000 tonnes.

The revival of Bangladesh jute industry and the popularity of synthetics have had an effect on Indian exports as a percentage of the world exports. The Indian share was as much as 57 per cent in the world exports in 1967-68 which was gradually reduced to only 41 per cent in 1970-71; it again went up to 56 per cent in the subsequent year.

Carpet backing is a specific item with considerable export potential, notwithstanding the threat of the synthetics and substitutes. In order to maintain the competitiveness of Indian jute products, the Government of India have taken price stabilisation measures from time to time and these include intensification of raw jute production through package programmes, grant of subsidies to growers, fixation of minimum support price of raw jute and regulation of production. Efforts are also being made to diversify the industry's production apart from maintaining its price level. Recently, the production capacity has also been increased by setting up of five more jute mills, one each in Assam, Andhra, Bihar, Orissa and Tripura. Negotiations have also been held with Bangladesh to form a unified approach for the export promotion of jute manufactures.

NEW AUSTRALIAN SCHEME OF TARIFF PREFERENCES

India's export to Australia is likely to receive a stimulus as Australia has reduced the import tariff by 25 per cent in July this year. Each tariff level in Australia has been reduced by a quarter of what it was before. The reduction, however, does not apply to purely revenue duties and anti-dumping duties.

The new Australian Scheme of Tariff Preferences for developing countries, which was announced recently, would also have great impact on India's export trade with Australia. The new system will replace the existing preference scheme, which, however, will remain in force until it is phased into the new system.

The new system will include all manufactured and semi-manufactured products, including processed primary products, apart from a list of exceptions covering mainly products where developing countries are already competitive or likely to become competitive at general tariff rates of duty.

The initial margin of preferences will be 10 per cent *ad valorem* below the general tariff rate (that is a rate of 40 per cent *ad valorem* would become 30 per cent for developing countries). The objective will be to increase the developing country's margin of preference by 10 per cent *ad valorem* at the end of a period of two years, until imports of particular products become competitive in Australian market. Duty free entry for a wide range of handicraft products–of which India is taking major advantage–will continue unchanged.

Complementing the new preference system, the Australian Government proposes to establish a small unit to assist developing countries to take advantage of the improved trading opportunities by servicing trade enquiries and providing assistance in the trade promotion field.

India's export trade to Australia was of the order of Rs. 189.20 million during April to December, 1972-73 as against Rs. 201.20 million during the corresponding period in 1971-72.

NDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PROGRESS OF BHOPAL HEAVY ELECTRICALS

The Heavy Electricals (India) Limited, Bhopal, the irst and the largest of its kind in India, has contributed ubstantially to India's programmes of industrialisation as well as export trade. It has helped establish a number of industries with indigenous know-how and equipment. Its engineers and technicians have already uccessfully designed, manufactured, supplied, erected and commissioned sophisticated modern electrical equipment for industries such as steel, aluminium, paper, rubber, cement, sugar and mining. A number of industries equipped with the Bhopal factory's electricals are rendering service throughout India and on a imited scale abroad.

The Heavy Electricals, today, has developed full expertise for designing complete systems for industrial drives and can prepare lay-outs for power stations and ub-stations. The factory also undertakes complete contracts for industrial drives with electronic and thyristor controls for various applications.

Among the steel projects coming up with the assistance of the Bhopal factory are the blooming mill of M/s. Tata Iron and Steel Company, Jamshedpur, Re-rolling Mills of Eastern Railway at Jamalpur, Indian Smelting and Refining Company and Kamani Engineering Corporation in Bombay.

In the aluminium sector, the Aluminium Sheet Rolling Mill at Taloja near Bombay has been equipped with sophisticated electric drives (including 2240 KW and 1870 KW DC Motors) and controls supplied by this factory. It has also undertaken the entire co-ordination, erection and commissioning of the electricals for the hot and cold rolling mills of Indian Aluminium Company's project at Taloja.

A number of paper mills including Ballarpur Paper and Straw Board Mills in Maharashtra, Orient Paper Mills and Straw Products in Orissa, Sirpur Paper Mills in Andhra Pradesh equipped with the factory's drives and thyristorised controls have already been commissioned. In the rubber industry, the Bhopal factory has already supplied drives and controls that are in operation under U.N. projects such as the Madras Rubber factory in Tamil Nadu, Dunlop (India) in West Bengal and Ceat Tyres of India in Maharashtra.

Cement is another industry for which the Heavy Electricals, Bhopal have supplied drives and controls. The company have already supplied motors and controls to a number of units. The Bhopal factory undertook a number of projects on turnkey basis for Mine Winders. These include complete electricals for Khetri Service Shaft of Hindustan Copper Limited in Rajasthan and Indian Copper Corporation in Bihar.

Besides equipping a large number of Industries in India, with its electrical drives, controls, switch boards and transformers, HEIL has supplied similar equipment for industries in various countries including Arab Republic of Egypt, Malawi, Uganda, Ghana, Iraq, Singapore and Malaysia. The Kufa Cement Plant in Iraq is being equipped with the motors supplied by the Bhopal factory including a 2500 HP A.C. synchronous induction motor, the biggest so far exported by India. The other major orders received by the Bhopal factory include 75 MVA transformers for Malaysia, again the largest equipment of its kind so far ordered from India.

INDIA'S BIGGEST PETROLEUM REFINERY

Estimated to cost Rs. 1700 million, the six million tonnes petroleum refinery to be set up at Mathura in Uttar Pradesh is to be the largest refining project in India.

The crude oil supply to the refinery is to be made available from the gulf of Kutch by a long distance pipeline. The import content in setting up of the refinery has been estimated at Rs. 750 million. The designed oil refining capacity of the refinery is placed at nearly six million tonnes of crude oil per annum with a provision for further expansion.

A 1100 kilometres pipline will link the refinery with Kandla port for the supply of crude. It is expected to refine a part of crude supplies that are to be imported from Iraq. Besides making the country self-sufficient in petroleum products, the refinery is also expected to make considerable headway in indigenous fertiliser production. After completion, the refinery will operate as a feeding point for fertiliser plants in North India.

A comprehensive range of petroleum products are expected to be produced by the refinery. This includes naphtha, motor gasoline, kerosene, aviation turbine fuel, high speed diesel oil, light diesel oil, fuel oil, fertilizer feed, bitumen and sulphur. The process scheme of the plant which is designed to produce middle distillates will have atmospheric distillation unit including electric desalter (annual capacity six million tonnes); LPG recovery and sweetening units for light products; pretreatment and catalytic reforming facilities to manufacture motor gasoline; distillate hydrotreating for middle distillates; vacuum flash unit to prepare feedstock for hydrocracker and bitumen units; a vibreaker unit; a hydrogen unit and sulphur recovery system.

The refinery is expected to save a sizeable amount of foreign exchange by way of undertaking refining activities indigenously. The demand for petroleum products in the country is growing consistently resulting in a wide gap between demand and indigenous refining capacity. Currently, the gap which is assessed at about 3 million tonnes (metric) per annum is mainly met through imports only. Unless the existing gap is bridged by indigenous refining capacity, the same is estimated to go up at a level of 6 million tonnes per year, within the next three to four years. The imported refined petroleum products have been estimated to cost more as compared to the imported crude oil and its refining cost. As such, the erection of the refinery at Mathura is expected to lead the country towards self-sufficiency in petroleum products.

The Refinery is to be constructed and operated by M/s. Indian Oil Corporation (IOC) in the public sector, while M/s. Engineers India Limited (EIL) a Government of India undertaking, will be the prime consultants/contractors for the project.

MANUFACTURE OF COMPUTERS

The Electronics Corporation of India Ltd., Bhopal, a public sector undertaking under the Department of Atomic Energy, has launched a programme for the manufacture of small to medium size computers.

A panel on Mini Computers has been set up by the Department of Electronics and a programme for the Indian design, development and manufacture of Mini Computers will be initiated based on the recommendations of the Panel. The current programme is keeping in line with Government's policy of encouraging Indian designs and production in the field of computers and achieving self-reliance in the shortest possible time.

Another scheme for the Indian manufacture of the ICL 1901 A computers through the International Computers Indian Manufacture Ltd. (ICIM) is under way.

The Government has under active consideration the setting up of production facilities for a range of computer peripherals, other sub-systems as memories etc. and needed components for the computer programmes.

COPPER CONCENTRATES FROM KHETRI

The Khetri Copper Project of the Hindustan Copper Limited has started producing copper concentrates. The project produced 1,511 tonnes of these concentrates in July, 1973. The copper ores mined and milled at the project during the month were 29,539 tonnes and 31,672 tonnes respectively.

The Indian Copper Complex at Ghatsila produced 1,004 tonnes of blistor copper during the same month. The flash smelter of the Complex was also recommissioned during the last week of July following its shut down for annual overhaul and modifications of the precipitator and wasteheat boiler sections.

At Ghatsila, the ore milled during the month was 65,491 tonnes and the production of wire bar and kyanite was 502 tonnes and 2,516 tonnes respectively.

A REVIEW OF INDIA'S ATOMIC ENERGY DEVELOPMENT

It was in August, 1948, a year after the attainment of Independence, that the first seeds of atomic energy development were sown in India, with the setting up of the Atomic Energy Commission. The Commission decided to set up the Atomic Energy Establishment at Trombay at the beginning of 1954. A year hence, the Commission decided to build 'Apsara', the first atomic energy reactor. Canada came forward to assist India for building the second reactor, 'Cirus' in April, 1955. Almost around this time, the thorium plant at Trombay went on stream.

The reactor 'Apsara' became critical in August, 1956. Two years thereafter the Government of India approval the proposal to build India's first atomic power station at Tarapur. The story of atomic energy development which followed since then would signify an exciting chapter of progress in the reconstruction of the Indian economy.

In 1959, the uranium metal plant of the atomic energy industry produced the first ingot of nuclear pure uranium metal. The first lot of ten fuel elements was produced in April 1960 at the Fuel Element Fabrication Facility of the Trombay establishment. By middle of this year the work relating to the third reactor, 'Zerlina' began; the second reactor 'Cirus' reached criticality as also the site for the first ever atomic power station in India at Tarapur was announced. Within a year hence (1961) 'Zerlina' also reached criticality.

The decision to build a second atomic power station at Ranapratap Sagar was taken in mid-1962. Simultaneously, the heavy water plant at Nangal went into production. At the end of this year, the site for a third atomic power station at Kalpakkam was selected in the State of Tamil Nadu.

The period during 1965-67 witnessed important developments including the inauguration of the Plutonium Plant, the decision taken to set up a Nuclear fuel Complex at Hyderabad, the signing of an agreement with Canada regarding the construction of the second unit of the Rajasthan Atomic Power Plant and the formation of Electronics Corporation of India and Uranium Corporation of India.

Both the reactors of Tarapur atomic station became critical in early 1969. An agreement was signed with France concerning the fast breeder test reactor at Kalpakkam.

In mid - 1970, the work on Kotah Heavy Water Plant began and uranium 233 was successfully separated from irradiated thorium for the first time at Trombay.

While the Zirconium Oxide Plant at Nuclear Fuel Complex commissioned in Hyderabad went on stream, the Zirconium Sponage Plant was also commissioned in 1971.

The Zero Energy Fast Reactor Plant at Trombay became operational in 1972 and the first reactor of the Rajasthan Atomic Power Plant attained criticality in the same year.

Such has been the chronological progress of atomic energy in India. With the progress already achieved and with various programmes underway, the country's atomic energy sector has facilitated the use of atom for a variety of peaceful purposes in agriculture, industrial development and scientific research.

Indian economy has indeed built adequate capacity, even within a few years of its atomic energy development, to export radio isotopes and laballed compounds and is thus contributing to the country's foreign exchange earnings.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

RESEARCH PROGRESS IN ELECTRONICS

Till recently, semi-conductor microwave devices were imported into India on a large scale. The devices are required for the development of large radar and communication complexes in the country. Keeping the need to build capability to manufacture these devices indigenously, the Central Electronics Engineering Research Institute (CEERI), Pilani, Rajasthan, has developed a number of the devices such as low power varactor diodes, voltage variable varicaps, varactor diodes for hormonic generation and IMPATT diodes.

Besides these, development of other two devices are under research at the CEERI. These are Electret Condenser Microphone and Silicon Epitaxial Growth.

Electret condenser microphones have an advantage over conventional condenser microphones in that the requirement of a dc polarising voltage is no longer essential. This is achieved by use of prepolarised electrets as diaphragm. The electret used is a thin polyster film which is metalised on one side. These diaphragms are polarised at elevated temperatures in the presence of a strong electric field. The diaphragms lose a fraction of their surface charge soon after the polarisation process but retain most of it. This manifests itself in the sensitivity of the microphone decreasing by 2 or 3 db within a few days after assembly. The CEERI electret condenser microphone has achieved a sensitivity of .63 db. The frequency response is uniform (within ± 2 db) from 40 Hz to 18 kHz.

The electret condenser microphones can be used as general purpose microphones in studios, auditoria and with tape recorders, etc. They can be made in different sizes and shapes.

Silicon epitaxial wafers of requisite characteristics are very necessary for the development and manufacture of present day high quality transistors, diodes and integrated circuits. According to rough estimates, there is need for about 200 thousand 1" diameter or about 50 thousand 2" diameter silicon epitaxial wafers per year by 1975.

Keeping in view the increasing demand for epitaxial wafers in the country, CEERI, Pilani, initiated Research and Development programme on the subject. A semi-automatic (solenoid valve operated) Model of silicon epitaxial reactor has been designed and developed. The design of the reactor is streamlined, compact and has incorporated safety features. Utilising CEERI developed reactor, the process for growing epitaxial layers on both N and P type substrates has been standardised. The associated techniques of epitaxial growth such as wafer polishing and its measurement facilities have been developed and standarised. A large number of epitaxial wafers have been made and tests including resistivity, thickness, stacking fault density have been made. The test results are satisfactory. Some of the wafers have been tested for fabrication of discrete as well as IC devices. Further work along these lines is in hand. Detailed specifications of the epitaxial layers can be obtained from the Information and Liaison Officer of CEERI.

DOOR FRAMES FROM MAGNESIUM OXYCHLORIDE CEMENT

The Central Building Research Institute, Roorkee, has recently developed a process for use of magnesium oxychloride cement in making door and window frames. Magnesium oxychloride cement has already found many uses in the manufacture of flooring tiles, flooring compositions, wood wool building boards and other pre-cast products.

The frames made from this cement possess adequate strength, good availability and screw holding property, machinability and paint holding property. These can be easily cast and erected at the site of construction.

For its production, magneisum oxide and dolomite powder are mixed with saw dust. Magnesium chloride solution is added to this mixture and poured into the moulds with reinforcement in position. Thorough compaction is achieved, preferably by using a plate vibrator, and the surface smoothened by trowel. Care is taken that the corners and edges are properly filled. All the vertical and horizontal members must be cast separately. Demoulding of frames is done after sometime of casting followed by aircuring before the members could be assembled.

Moulds of required size may be made of either seasoned timber with GI sheet lining or of steel.

The magnesium oxychlorde cement frames can be painted to any desired colour with an oil paint or emulsion paint. The cost of a magensium oxychloride cement frame compares well with that of the RCC frame and is about 33 per cent less than that of a timber frame.

A PORTABLE - RAY EQUIPMENT DEVELOPED

M/s. Radio & Electricals Manufacturing Co., Mysore Road, Bangalore-26, has recently developed for the first time in India, a portable–ray equipment.

Prototype of the equipment has been successfully tested both by All India Medical Institute, New Delhi and Bhabha Atomic Research Centre, Trombay, Bombay.

The Bangalore Company has been approached by an American firm for undertaking manufacture in Bangalore of recording tapes by utilising natural magnesite iron ore available indigenously.

DRUG FOR THE TREATMENT OF THYROTOXICOSIS

Central Drug Research Institute, Lucknow, has developed a process for the synthesis of 1–isopropyl–imidazolidine–2–thione (Centimizone) which is an anti-thyroid drug used for the treatment of thyrotoxicosis.

This drug has been approved by the Drug Controller of India for marketing as a new drug on the basis of clinical trials carried out at four different hospitals in India. It has been found effective in patients who have become resistant to other drugs like neomercazole.

The raw materials required for the production of this drug are isopropyl alcohol, bromine, red phosphorus, ethylene diamine and carbon disulfide. All these are indigenously available. Availability of ethylene diamine is, however, limited and so is the requirement.

Any unit manufacturing drugs should be able to produce this drug as well in its existing plant with suitable adjustment. On laboratory scale, about 5 kg. of the drug has been prepared in kg. batches.

PROGRESS IN INDIA'S SPACE RESEARCH

India's space research programme is broadly classified into three areas, namely, space sciences, space technology and space applications.

The space science programme includes research in aeronomy, x-ray and gamma ray astronomy, plasma physics, cosmic rays, studies of lunar material, meterorites and so on. This research is mainly carried out at the Physical Research Laboratory, Ahmedabad and at the Vikram Sarabhai Space Centre, Trivandrum.

Space technology embraces all aspects of work related to the development of rockets, satellites, propellants, scientific payloads and ground and space instrumentation. A year back, all the units of the Indian Space Research Organisation situated in Trivandrum were grouped together in 1972 and formed into a single centre named the Vikram Sarabhai Space Centre (VSSC). This centre includes the space science and technology centre, the Thumba Equatorial Rocket Launching Station (TERLS), the Rocket Propellant Plant, the Rocket Fabrication Facility and the Propellant Fuel Complex.

The Space Sciences and Technology Centre set up in 1965 is the nucleus laboratory for research and development. This centre has made strides in the development of sounding rockets and other allied rocket systems. Currently, it is engaged in the development of a satellite launch vehicle as well as synchronous satellite launch capability.

The Thumba Equatorial Launch Station which is sponsored by the United Nations became operational in 1963 and offers unique facilities to conduct research in ionospheric physics, geomagnetism, cosmic rays, astrophysics and solar physics. Though a tiny part of the vast programmes of space exploration which have already carried rockets to the Moon and to Venus, the Thumba centre was acclaimed as a milestone on the road to progress that India has made during post independence period.

The rocket propellant plant which was commissioned in 1969 is engaged in the production of solid propellant grains. The Rocket Fabrication Facility established

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in 1971 organises the production of Indian Centaure and other rockets developed at the Trivandrum space centre. The Propellant Fuel Complex is to produce some of the special materials required for the processing of propellants.

The Academy of Sciences of U.S.S.R. and the Indian Space Research Organisation have signed in May 1972 an Agreement under which a satellite weighing 300 kgs and built in India would be launched in a 600 km circular orbit from a U.S.S.R. cosmodrome using a Russian launch vehicle. The first mock up structure of the satellite has already been prepared. This has been examined and is being tested to ensure that it can withstand the typical environmental conditions under which it can be experimented during launch. An Indo-Soviet Satellite Project has established laboratories in Bangalore for carrying out comprehensive theoretical analysis of each of the membranes of the satellite structure. This project is being executed by the scientists and engineers of the Satellite Systems Division of Space Sciences and Technology Centre at the Vikram Sarabhai Space Centre. This satellite is to carry three scientific experiments, one on x-ray astronomy, the second on solar neutron and gamma rays and the third on the measurement of ionsopheric parameters.

For data acquisition and tracking of the satellite, the telemetry and telecommand ground station being established at Sriharikota (Andhra Pradesh) would be used. For more data coverage, additional telemetry and tracking facilities of other countries are also being obtained.

So far more than 100 rockets have been launched from the Thumba Equatorial Rocket Launch Station. The rockets launched (under collaborative experiments with various countries) include experiments exclusively for Indian scientists and flight tests of rockets under development.

The satellite launch vehicle project has been undertaken for the indigenous development of a satellite launch capability for placing a scientific satellite of 40 kg. in a 400 km. near circular orbit around the earth. The launch vehicle is to have four propulsive stages and would weigh approximately 17.4 tonnes. The length of the vehicle would be 22.8 metres. The outline design phase of this project has already been completed. Detail design and review as also preparation of the fabrication drawings are in progress.

A team has been constituted to analyse, study and report on an optimum approach to the development of a multi-stage launch vehicle capable of placing a satellite of about 800 kg. weight in synchronous equatorial orbit. The work relating to the detailed mission analysis, vehicle requirements, technological options and optimum choice is also in progress.

The Space Application Centre is currenrly involved in two areas, namely, satellite communications and remote sensing and meteorology. The main project in this context is the Satellite Instructional Television Experiment, a collaborative India-USA experiment which aims at demonstrating the use of satellite T.V. for national development. This project is being followed up by a domestic satellite system for nationwide T.V. and telecommunication coverage.

The Space Application Centre is presently involved in studies on systems design of the Indian National Satellite. As a part of its efforts in the satellite communication field, it is engaged in the indigenous design and development of the necessary ground segment, hardware, including earth stations, T. V. sets and antenna, low power T.V. transmitters and microwave components.

The Satellite Instructional Television Experiment involves the broadcasting of India's instructional TV programmes to about 5000 villages in different parts of the country. About 2000 sets will be of the direct reception type capable of receiving signals directly from the satellite. The remaining sets would be located in villages around the cities of Delhi, Srinagar, Ahmedabad and Bombay where regular VHF TV transmitters are existing or are being set up. ☐

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IECHANICAL EQUIPMENT FOR ZAMBIAN POWER PROJECT

The Indian Consortium for Power Projects imited, 11, Tolstoy Marg, New Delhi, has recently ecured a turnkey contract for the supply of mechanical quipment to Zambia Electric Supply Corporation. alued at Rs. 12 million, this contract, value-wise the rgest so far, is the eighth export order secured by the onsortium. The equipment to be exported is to be esigned, manufactured and supplied by M/s. Triveni tructurals Limited, Naini, Allahabad, a member ompany of the Consortium.

The scope of the contract covers the supply, rection and commissioning of mechanical equipment nsisting of three radial gates, with its associated hoists d embedded parts, a bulk head gate with three sets embedded parts and a gantry crane with rails r spillway plant of the Itezhitezhi Dam Project. he radial gates will weigh approximately 90 tonnes ch while the bulk head gate will be nearly 156 tonnes. he gantry crane will weigh about 216 tonnes. The transportation from India up to destination site in Zambia and the erection, testing and commissioning work is to be completed by the Consortium with the assistance of the Allahabad firm's supervising engineers by the end of November 1976.

The Indian Consortium's offer for the Zambian Project which is partly financed by the International Bank for Reconstruction and Development proved to be most competitive among seven tenders from industrially advanced countries like the Federal Republic of Germany, Italy, Yugoslavia and Austria. The consultants for the project, a reputed member of the Swedish Association of Consulting Engineers had detailed discussions with the representatives of the Consortium as well as Triveni Structurals Limited and placed the order only after fully satisfying themselves of the Indian competence to undertake the project. The project for which the Indian equipment is being supplied is envisaged to regulate the Kafue River for the purpose of hydro-electric generation. The dam is to create a reservoir of a gross volume of 5.7 km.^{3} extending over 40 kilometres in the upstream direction with an area of 37,000 hectares.

The Consortium has also recently won two other export contracts. One of them, valued at Rs. 4.5 million is for co-ordinated supply and supervision of erection of electrical equipment for the Phnom Penh High Voltage transmission project, Cambodia. This project is financed from out of a loan given by the Asian Development Bank. The second order valued at about Rs. 1 million is from M/s. National Electricity Administration, Iraq for the co-ordinated supply of 132 kv, 33 kv switchgear equipment forming extension to their existing Samawa Sub-station in Iraq.

With these orders, the value of export contracts secured by the Consortium is about Rs. 29 million.

The Consortium has to its credit the execution of a contract for the supply, erection and commissioning of two power transformers in Tanzania valued about Rs 2.87 million, well ahead of schedule and to the entire satisfaction of the customer as well as the Swedish Consultants. Two other earlier contracts from Malawi at a value of Rs. 2.4 million have also been completed. Under execution is an order from Kenya for the turnkey supply of equipment for three sub-stations valued at over Rs. 6 million. In this case, the supply of the equipment has been almost completed and the erection is in progress. Yet anothor contract received from Ghana valued at about Rs. 158,000 for the supply of instrument transformers is also reaching completion.

Besides the various export orders received, the Indian Power Consortium has under execution Rs. 37 million worth of domestic contracts. Tenders worth about Rs. 40 million are under active consideration of the Consortium's customers both in India and abroad.

The Consortium comprises five Government companies, namely, M/s. Bharat Heavy Electricals, New Delhi, M/s. Heavy Electricals, Bhopal, M/s. Instrumentation Limited, Kota, M/s. Mining and Allied Machinery Corporation and M/s. Triveni Structurals, Allahabad.

To further diversify its activities, the Consortium has recently set up separate departments for planning and engineering as well as erection. The Consortium expects to execute annually Rs. 100 million worth of erection contracts besides turnkey orders for supply, erection and commissioning of power stations and sub-stations.

AUTOMOBILE WHEELS TO WORLD MARKETS

Automobile industry ranks the topmost in the context of India's engineering products exports. During 1972-73, the industry secured an estimated foreign exchange of Rs. 172 million, registering a sizeable increase over that of the preceding year at Rs. 155 million, according to the Engineering Export Promotion Council, Calcutta.

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India-manufactured vehicles including trucks, uses, lorries, motor cars, jeeps, motor cycles, scooters, ractors, breakdown lorries and a complete range of ccessories and parts have a widespread demand verseas. Arab Republic of Egypt, Sri Lanka, Nigeria, ugoslavia, Nepal, Bahrein Islands, Singapore, fghanistan, Iran, Iraq, Indonesia, Malawi and ganda are the leading destinations.

M/s. Wheels India Limited, 37, Mount Road, adras, one of the manufacturers and exporters of heels for commercial vehicles, tractors, tanks, passenger ars and animal drawn vehicles effected exports orth Rs. 1.11 million during 1971-72. The firm was ble to step up its export performance to this level rom Rs. 1.07 million in 1970-71, Rs. 639,000 in 969-70 and only Rs. 3000 in 1968-69. The main tems of exports during 1971-72 included wheels for ommercial vehicles, cars, jeeps, tractors and animal rawn vehicles.

Besides complete vehicles, the automobile industry upplies abroad a comprehensive range of ancillaries uch as nozzles, elements, delivery valves, filters (oil, ir, fuel), motor starters, wheels and rims, shock bsorbers, spark plugs, brake assembly, ignition oils, voltage regulator crankshafts, pistons, cylinder iners, engine valves, carburettors, fuel pumps, adiators, cores, caps, heat exchangers, hydraulic umps etc.

Efforts of the ancillary units along with the main anufacturers of complete vehicles have progressively ed to a high indigenous content in Indian automobiles arying from 90 to 98 - 99.5 per cent in some vehicles nd components.

Interestingly, the production of commercial vehicles including cars and jeeps which went up to Rs. 2780 million in 1972 from Rs. 2623 million in 1971, had import content amounting to Rs. 330 million as against Rs. 438 million. Automobile ancillaries too registered a sizeable increase in production during 1972 at Rs. 1245 million as against Rs. 1202 million but the foreign exchange outgo came down to Rs. 102 million from Rs. 177 million in the respective years.

ABRASIVES ON EXPORT STREAM

India's total exports of grinding and polishing wheels and stones during 1971-72 amounted to Rs. 4.80 million while during the first three quarters of 1972-73 (April-December 1972), the export valve was of the order of Rs. 3.30 million.

The export range includes abrasive grains of silicon carbide, diamond impregnated wheels, grinding wheels of natural stones, grinding wheels of synthetic abrasive grains, hand polishing stones, whetstone, oil stone and hones, other synthetic abrasive grains and grinding wheels of stones etc. Besides, abrasive cloth papers, emery or carborundum coated paper, flint coated paper, abrasive paper etc. figure prominently in the export trade.

U.K., Bangladesh, Thailand, Uganda, Poland, Singapore and Indonesia are the leading markets.

M/s. Carborundum Universal Limited, Tiam House, 11/12, North Beach Road, Post Box No. 1677, Madras-1, manufacturers of a wide range of coated and bondage abrasives, super refractories, abrasive grains and calcined bauxite, exported coated and bonded abrasives at a value of Rs. 1.88 million in 1971-72 as against their export performance of Rs. 1.76 million in the preceding year.

The firm's plants are located at Tiruvottiyur (Madras) for manufacture of bonded and coated abrasives and refractories; at Edapally near Cochin for manufacture of aluminium oxide and abrasive grains and at Port Okha (Gujarat State) for calcining of bauxite. The firm is constantly engaged in diversifying its product range.

EXPORT EFFORT IN COTTON TEXTILES

The export effort of a renowned textiles group in Ahmedabad (Gujarat) has led to booking of export orders amounting to Rs. 23.50 million in 1973. The export performance of M/s. Lalbhai Exports Limited (LEL) who achieved this success was limited to Rs. 8.85 million in 1970, Rs. 11.70 million in 1971 and Rs. 13.40 million in 1972.

Set up five years back, LEL is today arranging for exports of seven reputed cotton textile mills, namely, 'Arvind', 'Aruna', 'Raipur', 'Asoka', 'Saraspur', 'Nutan' and 'New Cotton'. The export orders booked by them in 1973 include Rs. 9.76 million worth from U.S.S.R., Rs. 9.46 million from U.K., Rs. 2.74 million from Sudan, Rs. 0.34 million from U.S.A., Rs. 1 million from U.K. and Rs. 0.21 million worth from Singapore.

Of the actual total exports of Rs. 13.40 million during 1972, the value of direct overseas supplies by LEL amounted to nearly Rs. 11 million while supplies arranged through merchant - exporters were of the order of Rs. 2.40 million. Varietywise, the share of cotton goods alone in direct exports was of the order of Rs. 9 million while cotton made-ups accounted for another Rs. 1.40 million. Cotton hosiery, art silk (velvet) and cotton yarn were the other items exported directly during the year.

Regionwise, East Europe which absorbed about Rs. 4.6 million worth was the main export direction of LEL in 1972. U.K. with an intake of about Rs. 3.37 million was the second best customer for the Ahmedabad firm. Asian and African regions whose purchases amounted to Rs. 1.82 million constituted another important export destination during the year. The overseas supplies of the firm also reached the highly developed and sophisticated markets of West Europe (including Scandinavia) as well as U.S.A. and Canada. In fact, it was only in 1972 that the firm's supplies could make some headway for the first time in Japan, Canada, Kuwait, Malawi and Italy.

Aside from cotton textiles, LEL has also been arranging for limited exports of engineering goods since 1970. These exports are directed mainly to Sudan, Tanzania, Iran, Iraq, Sri Lanka, Malawi and Thailand.

LEAD SLIPS IN EXPORT STREAM

Adding to the range of products supplied to overseas markets, even lead slip are included in the list of items exported from India. For instance, M/s. Lead Slips Products Private Limited, 61, New Cloth Market, Ahmedabad, manufacturers of pencil lead slips and pencil lacquers, have not only been exporting pencil leads regularly but have also succeeded in improving their export performance from year to year. The firm's export value of lead slips which was of the order of Rs. 0.16 million in 1971, improved to above Rs. 0.18 million in 1972. Their exports are expected to reach a much higher level during the current year; even for the first six months of the year the export value is reported to be more than Rs. 0.12 million.

The export supplies of the firm in the current year were directed to Italy, Australia, Salvador, Equador and Philippines. In 1972, Italy, Canada, Australia, El Salvador, Sri Lanka, Singapore and Bangladesh were the main markets.

ELECTRICAL EQUIPMENT ON EXPORT FRONT

M/s. Mysore Electrical Industries Limited, Rajajinagar, Industrial Suburb, Tumkur Road, Bangalore, one of the firms engaged in the manufacture of electrical machinery, apparatus and appliances, exported during 1971-72 HT and LT switchgears. motor controlgears and electronic devices at a cost of Rs. 1.10 million. In the preceding years, their export performance was: Rs. 911,000 in 1970-71 and Rs. 150,000 in 1969-70. Their products are sought by quite a few markets abroad including the developed countries.

The range of manufactures of the firm includes high tension and low tension oil circuit breakers, trip-all phases type high rupturing capacity fuse switches up to 11 kv; oil immersed star/delta starters, direct on line push button starters; automatic star/delta starters, air break and oil immersed, low tension distinction boards and standard welding transformers etc.

India's total exports of electrical machinery and appliances netted foreign exchange valued at Rs. 187 million in 1971-72 as compared to Rs. 161 million in the preceding year. In fact, the exports in the last consistently witnessed uptrend froth year to year Rs. 133 million in 1968-69 and Rs. 146 million in 1969-70.

During the first three quarters of 1972-73 (April-ecember, 1972), the exports brought in foreign xchange at Rs. 183 million, nearly equivalent to the ntire preceding year's (Rs. 187 million). The com-osition of exports during the period under review of 972 73 and the full year of 1971-72 respectively was : quipment for distributing electricity Rs. 56 million and s. 54 million; domestic electric equipment Rs. 21.50 illion and Rs. 15.45 million; telecommunication quipment Rs. 22.50 million and Rs. 30 million; ectric apparatus for medical purposes and radiological pparatus Rs. 0.50 million and Rs. 0.87 million and ther electrical machinery and apparatus Rs. 41 million nd Rs. 39 million.

U.S.S.R., Kuwait, Singapore, Qatar, Iran, alaysia, Sri Lanka, Federal Republic of Germany, raq, Poland, Bangladesh, Nigeria, Nepal, Tanzania, hailand, Dubai, Australia, Sudan, Yemen Arab epublic and U.K were the principal importers during pril-December 1972 while Singapore, Kuwait, .S.S.R., German Democratic Republic, Federal epublic of Germany, Malaysia, Sudan, U.K., zechoslovakia, Nigeria, Iraq, Iran, Australia, U.S.A. nd Nepal were the leading destinations in 1971-72.

ACHINE TOOLS ON XPORT STREAM

M/s. Hindustan Machine Toots (HMT), the leading achine tools manufacturing firm in India, registered a izeable improvement in exports during 1972-73 as ompared to its export turnover in the preceding year. It fetched Rs. 15 million as against Rs. 11.7 million in he respective years.

HMT improved its exports to 50 per cent of the argetted figure of Rs. 30 million, set for the entire machine tool industry for 1972-73. In the preceding year, its export accounted for 40 per cent of the total exports effected by the Industry. In recent years, besides physical exports it has also started exporting technical know-how to other countries.

During the years, the exports were effected to a large number of markets abroad including the developed ones. The firm has been awarded recently an award by the Engineering Export Promotion Council, Calcutta for its exports during 1971-72. It has plans to set up an International Export Organisation to boost exports not only of its own but of other exporters too. During the Indian Exhibition at Singapore, the firm was successful in selling machines exhibited in the fair. Additionally, it also booked orders for machine tools amounting to Rs. 200,000. Further, it received a large number of enquiries for its exhibits from visitors to the exhibition.

HMT's production of machine tools including metal founding presses rose to an estimated Rs. 240 million in 1972-73 from Rs. 210 million in 1971-72 It has successfully diversified its range of manufactures by undertaking production of wrist watches and tractors in recent years. During 1972-73, their production rose sizeably to Rs. 53 million and Rs. 80 million from Rs. 46 million and Rs. 29 million respectively in the preceding year.

In 1972-73, India's machine tools industry earned foreign exchange at a value of Rs. 21.50 million according to an estimate of the Engineering Export Promotion Council, Calcutta.

TOBACCO EXPORTS UP

Indian tobacco industry contributes sizeably to the country's foreign exchange earning every year. The year 1972-73 witnessed the industry's foreign exchange earning reaching a record level of Rs. 631.37 million which registered a rise of about 50 per cent over the export value of the preceding year at Rs. 422.50 million. In terms of quantity too, the quantum rose to 92,455 tonnes as compared to 57,300 tonnes.

During the first quarter of 1973-74 (April-June 1973), the exports amounted to Rs. 281 million marking a rise over the export value of Rs. 253 million earned during the corresponding period of the previous year.

During 1972-73, U.S.S.R., U.K., Japan, Bangladesh, Ireland, Somalia, Bulgaria and Nepal were the major buyers while in the preceding year, U.K., U.S.S.R., U.S.A., Japan, Yemen Arab Republic, Ireland, German Democratic Republic, Indonesia, Belgium, Somalia, Czechoslovakia, Switzerland and Saudi Arabia were the principal importers.

During the first three months of 1973-74, U.S.S.R. constituted the leading buyer at Rs. 108.65 million (12.76 million kgs.). United kingdom was the second best market having bought worth Rs. 77.87 million (7.3 million kgs.), followed by Japan at Rs. 43.86 million (4.46 million kgs.), Irish Republic at Rs. 3.40 million (0.71 million kgs.) and Somalia at Rs. 1 64 million (0.59 million kgs.).

During 1971-72, among a large number of firms which contributed to the export endeavour of the industry, some firms in the line in Andhra Pradesh-M/s. Sulemankhan and Mehboobkhan, Guntur, M/s. East India Tobacco Company, Guntur, M/s. Agrimoor Private Limited, Guntur and M/s. Polysetty Somasundaram Private Limited, Guntur exported unmanufactured tobacco at a value of Rs. 14.93 million, Rs. 14.57 million, Rs. 14.05 million and Rs. 11.78 million respectively. Quantumwise, the quantity exported by these firms was respectively 1741 tonnes, 1638 tonnes, 1824 tonnes and 1276 tonnes.

Japan, U.S.S.R., Bahrein Islands, Czechoslovakia, Libya, Kuwait and Saudi Arabia were the leading customers of M/s. Sulemankhan and Mehboobkhan while United Kingdom, Japan, Arab Republic of Egypt and Nepal were the principal buyers of M/s. East India Tobacco Company. U.S.S.R. and German Democratic Republic were the main absorbers of M/s. Agrimoor Private Limited while the tobacco supplied by M/s. Polysetty Somasundaram was mainly directed to U.K., Japan and Belgium.

EXPORT PERFORMANCE AND POTENTIAL

INDIA'S SHARE IN WORLD TRADE

According to the United Nations Monthly Bulletin of Statistics, India's relative share in world trade has been shown at 0.67 per cent in 1972, 0.66 per cent in 1971, 0.73 per cent in 1970 and 1.13 per cent in 1962. In the year 1972, the world exports (excluding the trade of centrally planned countries) amounted to $ 363,600 million while exports from India amounted to $ 2445 million. In 1971, world exports were $ 310,000 million and Indian exports were $ 2051 million. Thus, India's relative share showed a negligible increase despite the fact that about 19 per cent increase was recorded in her exports.

What are the reasons for India's negligible share in world trade ? Firstly, the country's share depends not only on her performance but also on the growth rate achieved by other countries. While Indian exports have been going up year after year, the export trade from developed countries increased at a higher rate over a longer period. In the case of developed market economies, the exports went up by 18 6 per cent in 1972 as compared to the preceding year while the exports of developing economies (other than oil exporting countries) increased only by 5.1 per cent. Looked from another point of view, if the progress of exports over the last ten year (1962-1972) is taken into account, the world exports increased at a compound rate of 11.4 per cent per annum, the exports from developed market economies rose by 12.1 per cent and the exports by developing countries (non-oil countries) increased by 7 per cent per year. In the case of India, the growth rate worked out at a compound rate of 5.92 per cent per annum.

Among the other factors responsible for the low share of Indian exports, two are prominent. Traditional products still continue to have considerable weightage in India's exports and there is large and growing domestic demand for both agricultural and industrial products in India. A large part of India's export trade still comprises primary products and traditional manufactures such as tea, tobacco, oil cakes, cashew kernels, spices, ores, semi-processed hides and skins, cotton textiles, jute manufactures and coir products. Although the relative share of these items in India's exports has been gradually going down, yet on a rough basis such items accounted for nearly two-thirds of the world's total exports in 1971-72 against the share of approximately 85 per cent in 1960-61. The world demand in respect of traditional exports is subject to wide fluctuations, both in terms of quantum and value. On the other hand, global demand for manufactured products like engineering items and chemicals has been rising at a faster rate. This is the reason why the share of developed economies specialising in the production of manufactured items has been rising at a higher rate than that of the developing economies.

Again, India's internal market is indeed large and s expanding due to increased standard of living and mproved purchasing power. There are also other actors which are hampering the export effort in the manufactured products that enjoy greater weightage n terms of value. Factors like domestic shortages of basic raw materials, inadequate transport and port acilities, and inadequate base for production are also prominent. There are innumerable other developments on the demand side including synthetics and substitutes, technological improvements and protectionist policies of the industrialised countries by way of imposition of high tariff quotas and levies on products of interest to India, inadequate space and high shipping freights and more recently currency fluctuations due to uncertain international monetary situation.

While such is the picture of Indian share in global exports, the country's overall export earnings have indeed been rising year after year. Compared to the preceding year, the year 1969-70 witnessed an improvement of 4.2 per cent in the country's export earning at Rs. 14,130 million. The export growth rates in the subsequent three years were 8.6 per cent in 1970-71 (Rs. 153,530 million), 4.6 per cent in 1971-72 (Rs. 16,070 million) and 22.1 per cent (Rs. 19,620 million).

Several measures have been initiated by the Indian Government to carve for India a bigger share in the world market by way of creating an adequate production base and surplus for exports. The Industrial Licensing Policy and Import Policy of the country have been increasingly made export–oriented. The Import Trade Control Policy for the year 1973-74, for instance, has introduced important measures to facilitate export promotion. In the context of foreign collaboration in export oriented units, the policy allows such collaboration in the case of primary export-oriented units. The policy of not allowing foreign collaboration in trading activities might also be relaxed provided collaboration would exclusively result in exports. Foriegn collaboration can be considered in low priority sectors if the collaboration agreement provides for the greater part of production to be exported.

In regard to the policy for importing capital goods by export–oriented units, the latest import policy allows for the use of registered exporters entitlements for import of capital goods required for replenishment balancing or modernization. Supplementary licences for capital goods for jigs and tools would also be granted if they are required by exporting units for modernization and expansion. To this end, a special allocation of foreign exchange has been made. Special treatment is also being granted for export–oriented units by way of preferred sources of supply, facilities to increase production capacity, higher import replenishment and so on.

IMPACT OF DOLLAR DEVALUATION ON INDIAN EXPORTS

Following devaluation of the U.S. Dollar on February 13, 1973 by 10 per cent in terms of fine gold, it would be worthwhile to assess the impact on India's export trade to that country. In the absence of trade data of India's export to the U.S.A. during the period since the Dollar devaluation and the international monetary situation still remaining fluid, it would not be possible to quantify the effect of the devaluation on Indian exports to U.S.A.

It is, however, likely that in view of the appreciation of the Indian Rupee in relation to the U.S. Dollar, the Indian products in the U.S. markets might have marginally cost more and as such the tempo of Indian exports to that market might have possibly slowed down.

Jute products hold a predominant place in India's exports to U.S.A., accounting for nearly half of the total value of exports to that country. To improve the competitive position of the Indian jute goods to that market, the Government of India have taken corrective measures and it is hoped that the jute exports will be maintained.

Since the beginning of 1973, the German, French, Swiss, Netherland, Belgian Austrian and Japanese currencies have appreciated in relation to U. S. dollar by larger extent than the appreciation of Indian Rupee *vis-a-vis* the dollar. Against the goods of these countries in the U.S. market, Indian exports should therefore have an advantage. Again, owing to the fact that the Japanese Yen and German Deutsche Mark witnessed a greater appreciation than the Indian

Rupee *vis-a-vis* U.S.A. dollar, the Indian exports might gain an advantage in competition over the goods from these markets in third countries.

Indian exports to the U.S. market stood at Rs. 2630 million which was 16.4 per cent of her total exports at Rs. 16070 million during 1971-72. In the first three quarters of 1972-73, the exports to U.S.A. were Rs. 2080 million which accounted for about 15 per cent of her (India's) total exports at Rs. 13940 million.

During 1971-72, jute manufactures were exported to the tune of Rs. 1270 million to U.S.A.; other important products exported were - cashew kernels at Rs. 287 million, fish and fish preparations (Rs. 132 million), sugar (Rs. 88 million), pearls and precious stones (Rs. 55 million). tea (Rs. 61 million), artware (Rs. 52 million) and coffee (Rs. 44 million).

EXPORT REVIVAL IN SILK GOODS

Having attained a peak figure at Rs. 174.2 million in 1969-70, India's export trade in pure silk products came down to Rs. 100.5 million in 1970-71 and to Rs. 71.5 million in 1971-72. But as a result of special measures taken by the Government of India, world demand for Indian silk has again revived and during 1972-73 the exports improved to Rs. 83.10 million.

The unprecedented increase in the export trade of natural silk goods in 1969-70 was due to spurt in demand for scarves which constituted nearly 60 per cent of the exports in that year. This was, however, a proof of the inherent export potential of India's silk industry.

To revive world demand on a large scale, the Government of India have taken a series of measures of which the tightening of quality control at preshipment inspection level is the most significant. Floor f.o.b. prices were also fixed for silk scarves, stoles and ties, to ensure that no sub-standard goods would be exported. The supply of essential raw material to the manufacturer-exporter is also being ensured by the establishment of a raw materials bank under the Organisation of the Central Silk Board for tasar cocoons and tasar silk waste. It is as a result of these measures that the export trade showed signs of recovery in 1972-73. In this year, the contribution of dress materials to the total silk exports was of the order of Rs. 25.50 million against Rs. 20.90 million in 1971-72. Exports of scarves improved to Rs. 18.8 million against Rs. 17 million. Overseas supply of scarves has also increased to the level of Rs. 12.6 million as compared to Rs. 10.3 million in 1971-72. The contribution of readymade garments rose to Rs. 8.3 million in comparison to Rs. 6.0 million. The export of tasars looked up to the tune of Rs. 14.8 million as against Rs. 13.10 million.

The unit value realisations, both in respect of mulberry and tasar silk goods, has got a steady rise.

The measures initiated in 1972-73 have helped in continuously stepping up the exports in the current year also. In the first quarter of 1973-74 (April–June, 1973), the exports totalled Rs. 25.70 million as compared to Rs. 15.90 million in the same period of the preceding year. With this encouraging trend, the export performance during 1973-74 is expected to reach a level of Rs. 120 million.

IMPROVEMENT IN FURNISHING FABRICS EXPORTS

To provide a boost to the country's export trade in furnishing fabrics, the Government of India have initiated special arrangements to allot yarn of the required counts against confirmed export orders. The distribution control over cotton yarn of counts upto 40s has been withdrawn. The manufacturers–exporters of furnishing materials can freely obtain their requirements of yarn direct from the mills or their dealers. This, coupled with restoration of power supply, is enough indication that the mounting overseas demand for Indian furnishing fabrics will be fully met.

Export trade in Indian handlooms has been steadily improving. In 1972-73, the export value was Rs. 357 million as against Rs. 261 million in 1970-71, and Rs. 300 million in 1971-72. Cotton handlooms goods went up from Rs. 159 million to Rs. 227 million and Rs. 273 million in the three years ending 1972-73.

ilk exports, however, declined from Rs 100 million in 970-71 to Rs. 72 million in 1971-72, but they picked up gain to fetch Rs. 83 million in 1972-73. The upward rend has been maintained in 1973-74 as is evident from he export earning at Rs. 26 million even in the first quarter of the year.

The export target set for the handloom goods for the Fourth Five-Year Plan period was only of the order f Rs. 250 million per year. The actual exports have gone up and the target has been far exceeded.

Cotton handloom products are mainly exported o the U.S. market in the form of embroidered goods. These are now allowed to be imported in that market without any quantitative restriction. Export of cotton handloom made-ups including garments is required o be regulated within annual quotas while the export of other varieties of garments - durries and carpets is icensed freely.

Consequent on imposition of import policy on commonwealth textiles, effective from January 1972, the U.K. Government offered duty-free quotas for the mport of one milllon square yards of cotton handloom goods and 40,000 sq. yards of silk handloom. As Indian exports of these two varieties to the U.K. market in 1970-71 were of the order of 7.8 million and 450,000 sq. yards respectively, the quotas, however, were considered inadequate. Pursuant to the discussions with them, the U.K. Government raised duty-free quotas of cotton and silk handlooms.

From the European Economic Community, India has been seeking for unrestricted duty-free entry for handloom products. The EEC has presently granted a quota of $ 1 million each for cotton and silk looms. From East Europe, India has been trying to secure larger shares for her handloom export.

HAND AND MACHINE TOOLS IN EXPORT TRADE

With an export earning equivalent to that of the entire preceding year (1971-72), India's exports of hand and machine tools, registered a sizeable improvement during the first nine months of the following year, over the export value during the comparable period of the previous year. The exports amounted to Rs. 58.40 million as compared to Rs. 58.90 million for the full year 1971-72 and Rs. 42.35 million in the corresponding period of that year.

During April-December 1972, spanners constituted the major item of sizeable export value having secured Rs. 19.27 million. Czechoslovakia was the leading buyer which bought worth Rs. 3.66 million (0.33 million kgs.). U.K. was the next important buyer which imported worth Rs. 3.45 million (0.22 million kgs.), followed by Poland at Rs. 2.80 million (0.33 million kgs.), U.S.S.R. at Rs. 1.94 million (0.24 million kgs.), Yugoslavia at Rs. 1.10 million (88,246 kgs) and Federal Republic of Germany at Rs. 0.88 million (77,030 kgs.).

Next in importance in terms of value was the item of wrenches. It earned Rs. 10.57 million. U.S.A. was the topmost buyer which purchased worth Rs. 6.44 million. Quantumwise, it absorbed 0.45 million kgs. Federal Republic of Germany was the next significant buyer having imported worth Rs. 1.29 million (68,550 kgs.). Czechoslovakia, Canada, Greece, Australia, Iran, New Zealand and Thailand were among other markets.

Files and rasps was also one more area of significant export earning. It fetched Rs. 5.30 million. Federal Republic of Germany was the main market which bought worth Rs. 1.53 million. Among other buyers, Indonesia, U.K., U.S.A., Thailand, Nigeria, France and Australia were prominent.

The export value of other items was : pliers Rs. 1.90 million; rock drilling or core drilling bits Rs. 1.83 million; tungston carbide tips Rs. 1.03 million; taps Rs. 0.91 million and other tool tips Rs. 4.71 million.

Hacksaw and handsaw blades, metal working handsaws, blow lamps, garage guns, metal working hand tools, wood working hand tools, interchangeable tools for metal working and wood working interchangeable tools for hand tools, dies, chasers, lathe tools and tool bits, milling cutters, press tools, interchangeable tools for machine tools, other cutting blades for machines and other hand tools were the other important items of export trade.

GUYANA A NEW MARKET FOR INDIAN TEA

The first ever export contract, a trial order valued at Rs. 100,000 was recently placed by the External Trade Bureau of the Government of Guyana on a tea firm in Calcutta. With this contract, one more market was added to the long list of buying countries of Indian tea. The execution of this order is expected to be followed by other orders for Indian tea from that country. Hitherto, Guyana was importing Indian tea from the United Kingdom at a value of about Rs. 3 million per annum.

Indian tea exports are growing in value and quantity from year to year. During 1971-72, the exports fetched Rs. 1563.15 million in foreign exchange, registering a sizeable improvement over the export earning during the preceding year at Rs. 1482.45 million. During the first three quarters of 1972-73 (April-December 1972), the exports amounted to Rs. 1201.65 million as compared to Rs. 1167 million during the comparable period of the preceding year. U.K. is the largest buyer of Indian tea, followed by U.S.S.R., Arab Republic of Egypt, U.S.A., Ireland, Iraq, Afghanistan, Federal Republic of Germany, Canada, Australia and Netherlands.

PETROLEUM PRODUCTS BRING MORE FOREIGN EXCHANGE

India's exports of petroleum products are poised to make an appreciable headway during 1972-73. During the first three quarters of 1972-73, these exports at Rs. 82.60 million outstripped the entire export value of Rs. 68.55 million earned during the full preceding year, registering over 21 per cent increase.

Of the total export value during April-December 1972, bulk of foreign exchange was brought in by diesel oil alone. As compared to Rs. 18.92 million in the full year of 1971-72, the exports during the period under review of 1972-73 amounted to Rs. 27.52 million. In terms of quantity, as against 49964 tonnes (1972-72), 36337 tonnes were supplied abroad. Kerosene was the next important item which fetched Rs. 23.25 million as against Rs. 12.68 million. Quantumwise 43.86 million litres were supplied as compared to 23.85 million litres. Light distillates was yet one more item of sizeable export earning. It earned Rs. 22.12 million as against Rs. 29.17 million.

In addition to these major products, lubricating oils, grease (containing at least 70 per cent weight of petroleum products) secured Rs. 5.85 million, fuel oil Rs. 1.16 million, lubricating oils (below 70 per cent weight of petroleum products) Rs. 0.96 million. Mineral jelly and waxes, pitch from coal tar and other mineral tars, petroleum bitumen and other residues and bituminous mixtures were among other products of exports.

HYDROCHLORIC ACID EXPORTS UP

Among the different inorganic chemicals supplied to overseas markets by India, the exports of hydrochloric acid have registered almost a constant uptrend during the last few years. The export supplies of the acid which were limited to only 43 tonnes at Rs. 0.03 million in 1966-67 shot up to about 645 tonnes at Rs. 0.40 million in 1967-68, 6,295 tonnes at Rs. 4 million in 1968-69 and 7,174 tonnes worth Rs. 4.36 million in 1969-70. Though the year 1970-71 witnessed marginal decline at 6,055 tonnes (Rs. 3.73 million), these exports again rose to 10,898 tonnes at Rs. 6.87 million in 1971-72. The foreign exchange earning of the acid reached a record level of above Rs. 10 million in 1972-73. Even during the first nine months of 1973-74, the export value of the acid amounts to more than Rs. 8 million. Dubai, Abu Dhabi and Saudi Arabia with an intake of around Rs. 2 million each, were the major buyers during the period. The remaining supplies were directed to Muscat, Qatar, Bahrein Islands, Kenya, Sudan, Nepal, Liberia, Lebanon, Kuwait and Ethiopia.

In 1970, 28 units in the line with an installed capacity of 80,464 tonnes, produced 54,608 tonnes of hydrochloric acid. In 1971, though the number of units was less at 27, actual production improved to 57,100 tonnes against an installed capacity of 75,4 tonnes.

The acid has a variety of uses. Large quantities re consumed in the pickling of metals for the removal f oxides and scale. It is used in the revivification of one and carbon in sugar refining operations and in the roduction of metal chlorides, as a neutralising agent. t also finds use as a catalyst in organic synthesis and as n analytical agent in the production of alkyl chlorides rom olefins in pharmaceutical industry.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PERFORMANCE OF HINDUSTAN TELEPRINTERS

Reflecting an increase of 28 per cent over the preceding year, the turnover for the year 1972-73 by M/s. Hindustan Teleprinters was of the order of Rs. 42 million. The company's production performance in he year registered an all time record. Its production nd despatches of teleprinter machines and spares exceeded the target set for the year. The number of main machines produced stood at 6,042 against the target of 6,000. The spares produced were worth Rs. 6.17 million against the target of Rs. 6 million.

On the export front, the company's manufactures worth Rs. 0.74 million were supplied and the main destinations were Nepal, Mauritius, Lebanon, Jordan, Singapore, Belgium and Sri Lanka.

Three important features of the company's performance over the years are related to price reduction, self-financing of development programmes and product diversification. The company has been able to achieve these despite the rising prices of raw materials, labour and other inputs. The current price per unit machine is less than half the price of an imported machine. Again the company has developed capacity to pay for its own promotional programmes under the Fourth Five-Year Plan as also to provide for its growth under the Fifth Five-Year Plan. The entire capital outlay of Rs. 12 million for the Fourth Plan period is being met from its internal resources. An outlay for Rs. 27.7 million during the Fifth Five-Year Plan ending 1978-79 is also proposed to be met from its own earnings.

Among the new products on the company's assembly line are electric typewriters of its own design and 25 and 50 amps power cubicles for the telephone and telex exchanges. The first lot of its power cubicles was delivered in the beginning of this year. The typewriters will soon be in the market.

PROGRESS IN MINING MACHINERY PRODUCTION

M/s. Mining and Allied Machinery Corporation, a public sector undertaking under the Ministry of Heavy Industry, showed a progressive increase in production during the last three years. During 1972, its production reached a peak level of 15,700 tonnes, registering a thirty per cent increase over that of 1971 which was of the order of 11,991 tonnes. During 1970, its production was 7,764 tonnes.

The production target for 1973 has been set at 21,500 tonnes, valued at about Rs. 196 million.

With an objective to utilise available capacity to the optimum level, the Corporation recently diversified its production programme by development of designs and manufacture of various types of equipment which were hitherto being imported in the country.

In the field of import substitution too, the Corporation's contribution is noteworthy. From only Rs. 65,000 in 1966, the value of import substitution effected by the Corporation rose to Rs. 4.38 million in 1971 and during 1972, it was estimated to rise sharply to Rs 30 million.

Not only in production, but in booking orders at domestic level also, the Corporation's progress is equally remarkable. From Rs. 240 million in 1969, order book of the Corporation crossed the Rs. 350 million mark during 1973. Some of the orders were booked from Haldia Port for the manufacture of conveyor equipment worth about Rs. 120 million and from Madras and Marmugao Port Trusts for the manufacture of various sophisticated items such as conveyors, reclaimers and ship loaders, valued at about Rs. 70 million.

INDUSTRIALISATION IN STATES

On the industrial map of India, Maharashtra and West Bengal are the most industrialised states according to the Central Statistical Organisation, Calcutta, which conducted survey in 1969 on industries in India.

Maharashtra State having 2645 factories topped the list of States, followed by West Bengal having 1623 manufacturing units, Tamil Nadu 1255 units, Gujarat 1172 units, Uttar Pradesh 847 units, Mysore 569 units and Bihar 430 units.

In terms of contribution to the national income and employment position during the year under review, the figures respectively are : Rs. 7156 million and 804,000 numbers by Maharashtra; Rs. 3731 million and 763,000 numbers by West Bengal; Rs. 2282 million and 416,000 numbers by Tamil Nadu; Rs. 2038 million and 846,000 numbers by Gujarat; Rs. 1724 million and 275,000 numbers by Uttar Pradesh; Rs. 1390 million and 219,000 numbers by Bihar and Rs. 1335 million and 188,000 numbers by Mysore).

Of the total of 13,084 factories in the census sector, 12647 were covered under the survey. The industries in the census sector are those which are registered under the 'Factories Act' (which employ 50 or more workers with the aid of power or 100 or more workers, without the aid of power).

The survey covered the entire industrial units in the country including those in the census sector. According to the findings of the survey, census sector constitutes only 22.5 per cent of the entire industrial field of the country. However, it accounted for 93.6 per cent of the production capital, generating over 82 per cent of the total employment. During 1969-70, the sector contributed 91.3 per cent (Rs. 24,953 million) to the total value of manufactures. This was an addition of 20.73 per cent to the national income.

According to survey, the spinning, weaving and finishing textile units topped the list of major industry groups. The textile group had 1256 factories which employed 1.09 million workers and contributed Rs. 5248 million to the national income during 1969-70. The other major groups, according to the findings of the survey, are electric, light and power, iron and steel, sugar, gur, machinery and electric machinery.

METEOROLOGY IN INDIA

Modern meteorological observations in India began as early as 1796 with the setting up of an observatory in Madras.

Today, the country has about 500 observatories, at least one in each district, to record rainfall, temperature, wind, atmospheric pressure, clouds etc., twice daily or more often. Besides, 4,500 stations, mostly run by State Governments, record daily rainfall. Many of the observatories have been functioning for over a century. Data collected by these observatories all these years have been providing meteorological statistics for planning nation-building activities.

In view of the importance of the study of upper atmosphere, India has developed its own radiosonde instruments for measuring pressure, temperature and humidity upto great heights in the atmosphere. There are, to-day, 19 radiosonde stations for measuring the upper air atmosphere, and 25 radiowind stations to study winds at that level. Additionally, India has enlisted 200 ships for meteorological observations.

Meteorological observations today are primarily useful for preparing weather forecasts. Aviation and shipping are the principal users of such forecasts. Besides airports, weather forecasting offices are now located at most of the State capitals in India to serve the interests of agriculturists, railways, hydro-electric projects and the general public. All A.I.R. stations broadcast farmers' weather bulletins in their rural programmes. Under the scheme of “World Weather Watch' of World Meteorological Organisation, a Regional Meteorological Centre and an Area Forecast Centre of International Civil Aviation, Organisation Plan are functioning at Delhi. These put out weather analysis and prognosis for South Asia and neighbourhood, intended for general purposes and aviation. Delhi also forms a part of the system developed by the World Meteorological Organisation for speedy world-wide exchange of meteorological data. It is linked with Moscow and Melbourne for the purpose. Meteorological telecommunication links are also available with Bangkok and Cairo. To gather data from within the country expeditiously, more observatories have been equipped with teleprinter links or telex or wireless cilities. The meteorological offices at the four inter-ational airports at Delhi, Bombay, Calcutta and ladras are also being connected with additional tele-inters circuits for exchanging weather data relating airports.

Recently, satellites have provided a break-through the matter of weather observations from the ocean eas, particularly in identifying cyclones. Creditably, dia is operating at present 5 stations to receive the tellite cloud picture, 4 of them with indigenously bricated equipment. Cyclone warning radars have een installed at Visakhapatnam and Madras to rewarn the areas likely to be effected so that protective easures could be taken in time to save life and roperty. Calcutta and Paradeep are also being quipped with similar radars.

Indian meteorologists have also been experimenting r the last few years with building up suitable mathe-atical models and techniques to predict weather. The ndian Meteorological Department has recently installed 360/44 computer at Delhi.

The Meteorological Department of India has also eveloped its own capability for the manufacture of eteorological instruments. Except for the radars, ractically all the meteorological instruments are being ade in the departmental workshops, their annual utput being worth about Rs. 4 million. Instruments ke radio reporting raingauge have been developed. kopograph to measure visibility and ceilograph for loud base have been installed at Delhi and Calcutta irports.

The world meteorological community has recently aken to organising special expeditions for intensive ollection of meteorological observations, particularly ver specified oceanic region to make up for the gaps n the information. From 1963 to 1965, an International ndian Ocean Expedition was organised in which esides U.S.A., India was the major participant. This ear another monsoon experiment (MONEX) has been tarted for collecting meteorological and oceanographic bservations. Two Indian Navy ships alongwith four hips of U.S.S.R. and with scientists on board have ruised in different parts of the Arbain Sea and collected xtensive data.

SIXTY FOURTH SHIP LAUNCHED

A Cargo-liner of 13,900 DWT was recently launched at Visakhapatnam from the slip ways of the Hindustan Shipyard Limited. The vessel was named "Vishva Madhuri".

MV–"Vishva Madhuri" is the sixty fourth vessel launched from the Hindustan Shipyard Limited and the twenty ninth ship built for the Shipping Corporation of India. She is the last of a new series of ships with machinery three-quarter Aft and entirely designed by Indian engineers. A 60-tonne Derrick is fitted for lifting heavy cargo. The vessel conforms to the highest classification of the World Register of shipping.

So far, vessels of different sizes aggregating about 5,10,000 DWT have been built and delivered by the Hindustan Shipyard Limited.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

CYCLIC TIMERS DEVELOPED

The Regional Research Laboratory (RRL), Jorhat, has developed a simple on and off time switch, called cyclic timer, which can be used in control systems, temperature controllers, traffic controllers etc. In view of its extensive application, the demand is likely to be very high.

The device consists of either two PNP or two NPN type transistors along with potentiometers and capacitors to provide time constants. The time can be varied either by varying the potentiometers keeping the capacitors value constant or varying the capacitors keeping the potentiometers value constant. The system to be controlled has to be connected to the unit through an electromagnetic relay present in the collector of the transistor circuit. Thus, the unit automatically makes the system ON and OFF for a predetermined value.

A prototype has been made which gave excellent performance. The main items of raw materials required in the process are transistors, potentiometers and capacitors. The only item of equipment required is testing equipment.

PRECISION PLATINUM RESISTANCE THERMOMETERS

The National Physical Laboratory (NPL), Hillside Road, New Delhi 110012, has recently developed a method for fabrication of precision platinum resistance thermometers for various temperature ranges and differently designed sensores. These thermometers serve as primary (practical) reference standard thermometers to measure temperature to ± 0.001° C on the international practical temperature scale.

The present and future demand of platinum resistance thermometers is not readily available. However, it is expected to be increased with the expansion of the research activities in the laboratories and industries. These are not currently manufactured in India and the entire domestic demand is met through imports.

NPL has, so far, constructed 24 pieces of such thermometers and supplied to different research institutes and industries. All requirements of meterials etc. are known and designs can be made available.

The main items of raw materials required for fabrication of such thermometers are spec-pure platinum wire, gold wire, suitable sizes of pyrex glass, quartz tubings and capillaries, cut-mica, piecin sealing wax and helium exchange gas. Some of the items may have to be imported. The major items of equipment required are pumping system, fore pump, diffusion pump, annealing furnace and spot-welding machine which are available indigenously. Many other gadgets and dies can be fabricated indigenously.

This item can be taken up by firms already producing scientific instruments, without any substantial investment for diversification.

CHOLINE CHLORIDE

The Regional Research Laboratory (RRL), Jorhat, has developed a process for the manufacture of choline chloride, which is very essential for human growth. The product helps to prevent haemorrhagic kidney disintegration. It also prevents the development of fatty liver in depancreatised dogs.

The present demand of choline chloride which is, at present, being met through imports, is estimated to be 16 tonnes per annum. It is likely to increase steadily in future.

Choline chloride is prepared by reacting trimethylamine (acqueous) with ethylene chlorohydin in a pressure vessel at suitable temperature. After the reaction, mixture is taken out and dried over water bath in an open vessel. The dried material is purified by crystallisation with the help of isobutanol, filtered under inert atmosphere as the product is highly hygroscopic.

The product has been prepared on a laboratory scale in 100 gm. batch and 500 gms. of the product has been prepared. The product has been found satisfactory and can meet the requirement of drug industry.

The raw materials required for the process are available indigenously. RRL can give guarantee to an approximate yield of 79 per cent in laboratory scale.

AUTOMATIC WARNING AND CONTROL SYSTEM FOR RAILWAYS

An automatic warning and control system which will increase safety on Railways, has been developed by the Test Equipment and Display System Section of Bhaba Atomic Research Centre, Bombay in collaboration with Research Design and Standards Organisation of Ministry of Railways, Government of India, Lucknow.

The system has been designed to act as a safety aid to prevent disregard of signal aspects by locomotive crew for any reason ranging from lack of alertness to sudden indisposition. It indicates to driver of approaching signal well in advance. In case railway crew fail to control a train in compliance with signal aspect ahead, control of train is taken over by the system. The train automatically comes to halt in danger or prohibitive aspect.

Once the system is installed on rail network of the country, it is expected to reduce possibilities of accidents considerably. Laboratory testing of the system has been completed and field trials are being initiated.

MPORT SUBSTITUTION IN NDUSTRIAL MACHINERY

The industrial machinery sector in India covers a wide ange of manufacture. A near stage of self-sufficiency as been attained in several areas of industrial machiery. The quantum, value and range of production as been increasing year after year for many categories f the machinery. For some of the varieties, the ndian industry has built export competitiveness not nly for the products and components but know-how nd consultancy services.

Notwithstanding the overall progress made by the arious sectors of industrial machinery in the country, ome of them continue to import a part of their requirements either in the form of raw materials or finished roducts. It is in respect of such areas of manufacture hat the Government of India have been keen in mobisng efforts at import substitution. This is sought to be one by suitable arrangements for capacity expansion nd product diversification.

The rubber machinery industry is one of the xamples where the import substitution efforts are ielding success. The domestic demand for this machiery has been assessed at Rs. 140 million per annum 1973-74). Currently, there are three units in producion with a total annual capacity of only Rs. 11 million. As there is a wide gap between the demand and the xisting capacity, 11 schemes were approved by the Government of India for an aggregate capacity of about Rs. 160 million per year. Covered in the list of the ore sector industries, this industry is capital intensive equiring long gestation period for going into full production. It is expected that a capacity of about Rs. 27 million would be installed by the end of 1973 or early 1974.

For the production of printing machinery, 8 units have been installed already out of which seven are in production. Actual production for the year 1972 was reported to be about Rs. 9.3 million. In this sector again, the domestic demand is far higher than the present capacity. The demand has been assessed at about Rs. 170 million per year. In order to bridge the gap, the Indian Government invited proposals for additional capacity expansion. So far, the total capacity approved, however, covered by the letters of intent is of the order of Rs. 330 million per year, according to the information of the Directorate General of Technical Development, Ministry of Industrial Development, Government of India. This industry has also been put in the core sector in view of its importance and the long gestation period required for the implementation of each scheme. The schemes that have been approved in the recent past would, therefore, take some time to materialise. It is estimated that a capacity of around Rs. 30 million a year would get installed by the end of 1973. The expected production of the targetted installation of that capacity is Rs. 26 million by the end of the current year.

The paper and pulp machinery industry is another example where domestic demand has been rising at a fast pace. This is consequent to the rapid increase in demand for writing paper, printing paper and paper-based packaging. It has been estimated that additional capacity of the order of 700,000 tonnes of paper and pulp would have to be created to cover the country's demand during the Fifth Five-Year Plan period ending 1978-79. This would imply the setting up of a capacity equivalent to 15 to 16 integrated paper and pulp mills with an average capacity of 150 tonnes per day each. Currently, there are 17 licensed units for the manufacture of this machinery. The total installed capacity is of the order of Rs. 146 million against total licensed capacity of Rs. 441 million. Actual production was valued at Rs 62 million for the year 1972. It is estimated that by the end of 1973-74, the total installed capacity will be of the order of Rs. 150 million.

There is no unit manufacturing complete synthetic fibre machinery in India today although some parts are being produced by a few firms. The production value of various parts and individual items of equipment of this industry was placed at Rs. 17.5 million for 1972. Besides, three schemes were approved by the Government of India and are in different stages of implementation for an aggregate capacity of Rs. 127.5 million per annum. The present demand for the machinery is of the order of Rs. 300 million per year.

As in respect of the above sectors, the chemical machinery has also been placed in the core sector. It is estimated that the capacity production of heavy fabricated plant and machinery for fertilizers and chemicals would total Rs. 250 million (25,000 tonnes) by 1973-74, for which year the production target has

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been fixed at 20,000 tonnes at a value of Rs. 200 million. Besides, other varieties of chemical machinery are expected to produce worth Rs. 275 million by 1973-74 and by this year the capacity target is placed at Rs. 300 million. For the heavy fabricated plant and machinery for fertilizers and chemicals, there are 3 units now with a total capacity of 26,270 tonnes in the public sector. As for the other varieties of chemical machinery, 57 units have a licensed total capacity of 426 million per year and the capacity installed so far is of the order of Rs. 374 million. Actual production for these chemical machinery was Rs. 262 million during 1972.

Indigenous capacity for the production of footwear machinery and leather machinery is limited. Against an estimated demand of Rs. 35 million, a capacity of Rs. 3 million only has been installed. To bridge the gap, the Government of India invited applications for creation of further capacity in this field. In response thereto, a few proposals were received and are being processed. At the moment, there is already a unit in operation and there are five more units having a capacity for Rs. 27 million registered with the Directorate General of Technical Development. No significant progress in the matter of implementation of the five additional projects has been reported.

With five manufacturing units, the dairy machinery production has risen to the level of Rs. 37.5 million during tne year 1972. The licensed capacity of these units is about Rs. 53.2 million. Domestic demand for the dairy equipment is estimated at Rs. 60 million at the end of 1973-74. To fill in the gap between the future demand and the existing capacity, the manufacturers already in the line have geared up to the maximum extent. Also additional capacity worth Rs. 55 million is sought to be created.

Thus, the areas of industrial machinery manufactured in India for which the domestic demand is on the high side in comparison to the present capacity are receiving close attention by the Government of India with a view to broadening their base so that in the long run indigenous demand for them would be met growingly. This would consequently save the foreign exchange outgo for their imports. □

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NDIAN HANDTOOLS TO VORLD MARKETS

Enjoying growing reputation as a competent supplier f a wide range of handtools and small tools to world narkets, the Indian handtool industry has recorded ppreciable improvement in its export trade in recent ears. The export value has attained a level of nearly Rs. 59 million in 1971-72 as compared to about Rs. 49 nillion in 1970-71 and only Rs. 26 million in 1969-70. n the first three quarters of 1972-73, the export supplies t Rs. 58.40 million touched the figure for the entire receding year and registered an increase of more than Rs. 16 million over the exports worth Rs. 42.34 million luring the corresponding period of 1971-72.

During the first three quarters of 1972-73, spanners onstituted the major item of export with a foreign xchange earning of Rs. 19.27 million. Czechoslovakia, J.K., Poland and Yugoslavia were the major buyers in rder of their intake. Pipe wrenches which were supplied broad at a value of over Rs. 10.50 million constituted he next best variety of export earning. U.S.A. with an intake more than 50 per cent of the total export value topped the list of buyers, followed by Federal Republic of Germany, Czechoslovakia, Canada, Greece, Thailand, Iran, Australia and Poland. Other important items exported in the category included pliers, pincers, wrenches, files and rasps, metal working handtools, dies and taps, milling cutters, rock drilling or coredrilling bits, tungsten carbide tipped tools and carbide tips.

M/s. Gedore Tools (India) Private Ltd., 151, Golf Links, New Delhi, is one of the leading firms engaged in this line of export. Its overseas supplies rose from a bare Rs. 0.04 million in 1963-64 to nearly Rs. 10 million in 1968-69, Rs. 12.66 million in 1969-70, Rs. 16.27 million in 1970-71 and Rs. 21.74 million in 1971-72. Creditably, their exports reached a record figure of about Rs. 33.48 million in 1972-73. Their target for 1973-74 is Rs. 45 million.

The bulk of overseas supplies made by the firm in 1972-73 was directed to U.S.A. and other developed countries in Europe. U.S.A. with an intake worth about Rs. 9 million topped the list of customers. Czechoslovakia which imported worth Rs. 5.74 million was the second best buyer, followed by U.K. at Rs. 4.63 million, West Germany Rs. 3 million, Poland Rs. 1.81 million, Yugoslavia and Greece Rs. 1 million each. Philippines, Australia, Indonesia, U.S.S.R., Iraq, Thialand, Malaysia, New Zealand, Saudi Arabia, Singapore, Taiwan, Syria, Canada, Iran, Lebanon and West Indies were among other important importing countries. In all, the products of the firm found their way to 33 countries of the world. Exports to Japan, though limited, were significant considering that it was only in 1971 that the New Delhi firm succeeded in making the first shipment of handtools to Japan. Similarly, they were also the pioneer in introducing Indian handtools in U.S. market. To its credit, the firm received a Certificate of Merit from the Government of India for their commendable export performance for the year 1968-69. Recently, they also bagged the National Export Award for exports for the year 1969-70.

The firm owes its success to high quality, competitive price and high standard packaging of its products. They claim to use the most suitable types of steel for the particular tools such as medium or high carbon steel or chrome vanadium steel. The steel is cut, forged and machined, heat treated and then plated, painted or given other surface treatment. Most modern techniques and methods of production are adopted and the latest equipment is used. The tools are inspected and checked for quality at various stages of production. The forging dies are carefully inspected and then put under the drop stamp hammers. After broaching and machining, the opening of the wrenches and other dimensions of the tools are checked on gauges. Open jaw spanners are calibrated individually so that the jaw openings are within specified tolerances. From different batches samples are taken out and regularly checked for hardness. As Gedore's production is export-oriented, their products are made to international standards and usage. The tools made by the firm are packaged in modern sophisticated manner, even to meet the fastidious requirements of the U.S., such as mounting sets on display cards and packaging spanners in plastic pouches. The endeavour is to package the tools in the most modern and sophisticated manner. Their products are available at competitive prices on account of the high standard technology available to them and the comparatively low cost of labour.

Set up in 1960, the firm is reported to be Asia's largest producer of handtools with three plants at Faridabad (Haryana). Alongside increase in exports, it has succeeded in improving its production turnover from a mere Rs. 4.2 million in 1962-63 to nearly Rs. 59 million in 1972-73. The present installed capacity also marks almost a six-fold increase over the 720 tonnes in 1963. They have also diversified their product range which includes open jaw spanners, ring spanners, combination ring and open end spanners, adjustable wrenches, stillson pattern pipe wrenches, socket spanners and attachments, cold chisels, combination cutting pliers, Allen Head Wrenches and Tubular Box spanners. All these tools are made in different sizes for multifarious and diverse applications.

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NYLON TECHNOLOGY TO KENYA

Besides physical exports of a wide range of heavy and light engineering items, Indian industry has now developed competence to undertake overseas supply of technical know-how. M/s. J.K. Synthetics, Kamla Towers, Kanpur, have recently bagged a Rs. 50 million global export order from Kenya for setting up an 1800 tonne nylon-6 filament yarn plant in that country. The order has been won in the face of stiff competition from reputed companies of Europe and the plant to be set up will be the biggest synthetic filament yarn plant so far in Africa.

Under the terms of the order, the firm, besides providing the process know-how, will supply synthetic fibre and chemical machinery to the Kenyan plant. Representatives of the firm are to visit Kenya shortly in response to the Kenyan Government's desire to enter into financial collaboration also for this project. Kenya will take up 51 per cent of the equity capital while the Indian firm's share will be 49 per cent.

The company has also, lately, received an export order from Federal Republic of Germany for supply of a 12 tonne per day capacity ethylene glycol plant. In addition, the firm hopes to secure two more overseas orders. One of these is worth Rs. 60 million and relates to the setting up of a 2700-tonne nylon-6 plant in Colombo (Sri Lanka). The Government of Sri Lanka has advised the Indian firm that it might be entrusted with the project as turnkey contractor provided its terms are competitive to those offered by a Japanese party.

The second order is to be placed by Bangladesh Government who have already approached the Indian firm for supply of know-how and equipment for nylon-6 polymerisation plant to match with the existing capacity of spinning in that country. Bangladesh has also requested M/s. J.K. Synthetics to revive its spinning plant supplied earlier by a West European firm.

Apart from the order now secured by the above firm, India has five joint venture projects in Kenya which relate to the manufacture of textiles, gripe water, woollens, light engineeering products and corks.

SPORTS GOODS ON EXPORT FRONT

Crossing the target of Rs. 30 million set for the year 1972-73, India's exports of sports goods shot up to Rs. 36.6 million during the year. As compared to the export turnover in the preceding year at Rs. 25.5 million, the increase during 1972-73 was of the order of nearly 44 per cent.

The main items of export expansion during 1972-73 included footballs and other leather balls, rackets, bladders, indoor games and EPNS sportsware. Prominent customers for Indian sports goods include Australia, Bahrein Islands, Belgium, Canada, Sri Lanka, Italy, Netherlands, Kenya, Kuwait, France, Malaysia, Singapore, Mauritius, Zambia, Malavi, Sweden, Spain, Switzerland, Thailand, U.K., U.S.A. and Federal Republic of Germany. Poland has emerged as a new significant market. Its imports totalled nearly Rs. 1 million.

During 1971-72, the export range included footballs, rugby ball covers, bladders and football covers; cricket requisites; hockey balls, hockey sticks and blades; tennis balls, rackets and frames; badminton and tennis racket presses; shuttle cocks and racket frames; polo balls and sticks including blade shafts; non military arms, fishing rods, polo and other fishing equipment. A comprehensive range of other appliances for outdoor games iucluding appliances for gymnastics was also in the export line.

U.S.A., Canada, Australia, U.K., Denmark, France, Federal Republic of Germany, Nigeria, Sudan, Tanzania Republic, Iran, Netherlands and Singapore were the principal importers.

M/s. F.C. Sondhi and Company (India) Private Limited, Basti Sheikh Road, Jullundur, one of the established sports goods firms in India has exported its wares worth Rs. 2.1 million in 1971-72. The firm stepped up its exports to this level from only Rs. 450,000 in 1968-69, Rs. 850,000 in 1969-70 and Rs. 1.2 million in 1970-71. It was awarded a Certificate of Merit by the Sports Goods Export Promotion Council (New Delhi) for its export achievement in 1971-72. The firm is stated to be the second largest sports goods manufacturing unit in India.

The Jullundur firm has to its credit the manufacture of a comprehensive range of sports goods. Its efforts towards progressive diversification in the product range enabled it to satisfy the rapidly changing needs of the customers at home and abroad. The items turned out by it are subjected to strict quality control.

India's sports goods industry is a typical example of labour intensive industries. During the last two and half decades, the industry organised itself into a vital sector having a large number of small, medium and large size units in its infrastructure. Presently, there are more than 650 units engaged in the manufacture of sports goods.

During 1970-71, production of sports goods was of the order of Rs. 53 million as against the installed capacity of Rs. 70 million. In the preceding years, the figures of production and installed capacity were respectively : Rs. 40 million and Rs. 60 million in 1969-70; Rs. 35 million and Rs. 55 million in 1968-69 and Rs. 30 million and Rs. 50 million in 1967-68. The proportion of domestic consumption is around 70 per cent of the total production.

The production range includes items required in indoor and outdoor games. Outdoor game items cover cricket bats, balls, stumps, batting gloves, wicket keeping gloves, wicket keeper's and batsman's legguards, hockey gloves, hockey balls and sticks, goalkeeper's pads, footballs, football gloves, badminton and tennis rackets, tennis balls, polo equipment, golf gloves, punching gloves, boxing gloves, basket balls and baseballs etc. In indoor games, items like carrom boards, chess sets, ping pong balls and bats, dart boards, billiard tables, balls, sticks, rings and ring boards are manufactured. Besides, a wide range of instruments for physical exercise, EPNS sportsware such as medals, trophies and sports cups are also produced.

STARCH PRODUCTS IN EXPORT TRADE

Alongside a varied range of items, starch products are also included in India's growing export trade. For instance, the export value of maize gluten alone in 1970-71 and 1971-72 amounted to Rs. 1.80 million and Rs. 1.42 million, respectively. Even during the first three quarters of 1972-73, the overseas supply of the product was worth Rs. 1.23 million. U. K. and Bangladesh were the main destinations during the period while in 1971-72 U. K. was the major buyer followed by Belgium and Singapore.

M/s. Anil Starch Products Ltd., Anil Road, Ahmedabad, succeeded in nearly doubling the exports of their starch products including maize gluten, maize starch and enzymes to Rs. 2.30 million in 1972-73 from around Rs. 1.35 million each in 1971-72 and 1970-71.

The Ahmedabad firm is registered as a manufacturer/exporter, both with the Basic Chemicals, Pharmaceuticals and Soaps Export Promotion Council, Bombay and the Processed Foods Export Promotion Council, New Delhi. They are engaged in the manufacture of maize starch powder, modified starches (thin boiling starches), dextrins (white and yellow), anilogel (special starch for mono-cell dry batteries), liquid glucose (glucanil), dextrose monohydrate (dextranil), Calcium gluconate, sulphuric acid, superphosphate, mixed NPK grade fertilisers, activated carbon and enzymes like bating agent for leather industry, desizing agent for cotton textile industry and enzyme for detergent.

CHEMICALS EARN MORE

India to-day manufactures and exports a wide range of chemicals including organic and inorganic chemicals. During the first nine months of 1972-73 (April-December 1972), the export value of this group improved to Rs. 63 million as against Rs. 52.20 million in the corresponding period of 1971-72. The increase in 1972-73 was due to the improvement in export of inorganic chemicals, elements, oxides and halogen salts which improved their earning to Rs. 39.64 million from Rs. 28.70 million. The exports of organic chemicals were at Rs. 23.37 million as against Rs. 23.40 million.

In the full year of 1971-72, the foreign exchange earning of chemicals is valued at Rs. 72.32 million. Of this, the share of organic chemicals was of the order of Rs. 33.30 million while that of inorganic chemicals reached a level of Rs. 39 million. Prominent customers for Indian chemicals are Japan, U. K., U.S.S.R., Italy Netherlands, Switzerland, Yugoslavia, U.S.A., Sri Lanka, Dubai, Saudi Arabia, Burma, Sudan, Thailand, Vietnam Republic, Iraq, Singapore and Indonesia.

During 1972-73, M/s. Chemco Supply Corporation, Khorshed Building, Pherozshah Mehta Road, Bombay, increased their exports manifold to reach the level of Rs. 20 million as compared to only Rs. 0.55 million in 1966-67. The firm has been awarded the 1972-73 Export Trophy by the Chemicals and Allied Products Export Promotion Council, Calcutta.

The export range of the firm includes hydrochloric acid, liquid chlorine, barytes and bentonites. The supplies by the firm are directed mainly to the Gulf region where it is reported to account for a substantial proportion of India's total exports in this line to the region.

EXPORT PERFORMANCE AND POTENTIAL

ON EXPORT OBLIGATIONS

The Government of India follows a two pronged policy of export obligations by way of (a) General Export Obligations applicable to all units operating in selected industries and (b) Special Export Obligations imposed on individual industrial units. While the general export obligations have been imposed as a part of the Import Trade Control Policy, the special export obligations are imposed by the Industrial Licensing Committee, Foreign Investment Board and Capital Goods Committee.

As a part of the Import Trade Control Policy, industrial units in selected industries whose potential to contribute to overseas sales is considered good, are subjected to an export obligation of 5 per cent of their production. Small scale units as well as new units which have not yet completed five years of production in these selected industries are, however, exempted from the export obligations.

The list of industries which are subject to the general export obligations includes bicycles and their components, stationary type of diesel engines, specific varieties of small and cutting tools, coated and bonded abrasives, dry and storage batteries, wire ropes, certain automobile ancillaries, pipes and tubes, transmission towers, weighing machines, paints, varnishes and enamels and specific categories of drugs and pharmaceuticals. While the afore-mentioned products are included in the list of priority industries, the non-priority industries on which export obligations have been imposed include radio receivers, cosmetics, playing cards, spectacle frames and vacuum flasks.

As regards special export obligations, they are imposed by the Industrial Licensing Committee, Foreign Investment Board and the Capital Goods Licensing Committee and MRTP (Monopolies and Restrictions Trade Practices Committee). The Licensing Policy Export Obligations are those which are imposed on large industrial houses and foreign majority concerns if they desire to participate in industries other than those in the core and heavy investment sectors. According to the Licensing Policy, they would be permitted to participate in these sectors only if they undertake to export 60 per cent of the additionality in production to be achieved in a period of three years provided the balance of the production for internal sales would not be so much as to swamp the other producers. The percentage of export obligations would be 75 per cent in respect of items reserved for the small scale sector.

In addition, there are certain other measures taken by the Indian Government to rationalise the policy of export obligations with a view to expanding the country's production base. For instance, the Santacruz Electronic Export Processing Zone has been established in such a manner that all the manufacturing units in the Zone would be under an abligation to export their entire production against a number of concessions and incentives. There is also a proposal to allow transfer of complete working plant from abroad to India subject to substantial export obligations.

Currently, the entire question of export obligations is under review with a view to designing a long term strategy in this context.

NIXON ROUND OF TRADE NEGOTIATIONS

The Preparatory Committee for the Multilateral Trade Negotiations set up by the General Agreement on Trade and Tariff (GATT) to prepare the ground rules for the negotiations, has recently completed the job of drawing the broad principles of negotiations. The Preparatory Committee has also drawn up the draft of a declaration which the Ministerial level session of GATT would be invited to discuss in September this year.

The new Multilateral Trade Negotiations will be distinct from the negotiations held earlier under the auspices of GATT. The earlier negotiations mainly concentrated on tariffs and did not attach sufficient importance to the problems of non-tariff barriers standing in the way of promoting exports, particularly of manufactured products and semi-manufactures from the developing countries. As compared to the techniques adopted at the Kennedy Round of Tariff Negotiations (1964-67), the proposed Multilateral Trade Negotiations, popularly known as Nixon Round of Trade Negotiations will lay emphasis on non-tariff barriers such as quantitative restrictions, customs evaluation procedures, health and sanitary regulations, mixing regulations and internal taxes. These negotiations are considered to be of immense significance as they seek to secure additional benefits in the context of international trade of developing countries.

Following the agreements arrived among the developed countries on realignment of exchange rates of different currencies, two joint declarations were made by the United States and the European Economic Community and by the United States and Japan in early 1972. These declarations expressed the intention of the parties to convene a comprehensive Multilateral Trade Negotiations in 1973 under the aegis of the GATT. The basic objective of these negotiations would be to enlarge the export markets and foreign exchange earnings of the developing economies.

It was decided in the 28th Session of the GATT, held in Geneva in November last, that the new negotiations should cover all classes of products including agricultural commodities and should deal with non-tariff barriers as well as tariffs. India's approach in the Multilateral Trade Negotiations could be amplified by the following : (i) elimination of tariff and non-tariff barriers in respect of both the agricultural and industrial products that are of current and potential export interest to India; (ii) abolition of internal taxes and fiscal charges on tropical products which are not domestically produced in developed countries; (iii) special treatment to be accorded to the trade problems involved in the tropical products; (iv) widening of the scope and coverage of the Generalised Scheme of Preferences; (v) provision of assurance that the likely reductions in the Most Favoured Nation (MFN) rates as a result of the negotiations should not erode the benefits accrued to developing countries under GSP; (vi) provision of a credit share to developing countries in the increasing volume of global trade and (vii) non insistence to reciprocity from the developing countries by the developed countries.

OIL EXPLORATION ACCORD WITH IRAQ

A service agreement between India and Iraq has been signed recently, intended to facilitate oil exploration in some specific regions in Iraq by India's Oil and Natural Gas Commission. The Agreement was concluded in pursuance to the visit of Iraqi delegation to India earlier, in April last year.

This Agreement forms part of the overall agreement on the sale of Iraqi crude oil to India. Iraq is already supplying crude oil in large quantities to this country. In fact, trade relations between both the countries are strengthened resulting in sizeable benefits for both.

Recently, a technical and economic agreement was signed between both the countries. According to it, India is to supply Iraq goods and services for a number of development projects in that country, such as, the Baghdad - Ramadi–Al–Qain Railway project and steel rolling mills and provide facilities in the fields of electric power transmission, ship-building and repairs, iron ore supply for steel mills and projects. In addition to this, India will supply a large number of equipment to Iraq catering to the needs of engineering, fertiliser, petroleum and chemical and natural gas sectors. The bilateral trading arrangements on a balancing basis, as far as possible, entered into between both the countries, are intended towards greater cooperation in all the fields.

India's exports to Iraq amounted to Rs. 97 million during 1971-72 as against Rs. 90.50 million in the preceding year. During the first three quarters of 1972-73, the exports were valued at Rs. 85.80 million.

India's imports from Iraq were of the order of Rs. 35.70 million in 1971-72. During the first three quarters of the following year, the imports totalled Rs. 25.70 million.

INDO-SUDANESE ECONOMIC COOPERATION

India and Sudan have recently finalised in New Delhi the text of an Agreement on Economic, Technical and Scientific Cooperation. The formal agreement will be signed after the completion of appropriate constitutional formalities.

Under the Agreement, Sudan and India will cooperate in an overall study of the cement industry in Sudan and in the establishment of plants to increase the production of cement in that country.

Both the countries have also agreed to cooperate in extending the cultivation of sugarcane in Sudan and in utilising the increased availability of sugarcane to increase the production of sugar. It has also been agreed to cooperate in the utilisation of the by-product molasses for the manufacture of products, such as yeast and cattlefeed.

The Government of the Democratic Republic of the Sudan has indicated that it plans in the long term to convert all the cotton grown in that country into yarn and textiles to meet the entire domestic demand of Sudan and to export the balance. India has agreed to cooperate in the establishment of textile factories in that country.

A review of the Development Plans of the two countries has indicated several areas in which the two countries can cooperate, such as fruit and vegetable processing and canning, manufacture of caustic soda and sulphuric acid and in the setting up of an industrial estate in Sudan which may include the manufacture of leather products, electrical fans, irrigation pumps and storage batteries. India will also assist in the development of these fields of industrial activity in Sudan.

The agreement also provides for exchange of information and data, exchange of experts and the training of personnel in such research institutions in the two countries which are designed to improve all cash and food crops. Both the countries will also provide facilities for the training of scientists, technologists, technicians and planning officials in suitable institutions and departmentsin the two countries.

In this context, the functioning of the current trade agreement between Sudan and India was also reviewed. India's trade with Sudan is conducted through bilateral balanced trade arrangements, which are negotiated every year. In these trade agreements there is a provision for holding mid-term talks for reviewing the flow of trade between the two countries under the Trade Plan. The current Trade Plan was concluded in January, this year.

The main items Sudan supplies India under the Trade Agreements are cotton and a limited quantity of gum arabica. The exports from India cover a wide range varying from primary commodities like tea and jute to sophisticated items of engineering goods and chemicals.

VEGETABLE OIL PRODUCTS

EXPORT REVIEW

Exports of vegetable oil products—oil seed cakes and meal—rose to a level of Rs. 411.30 million during the first nine months of 1972-73 (April–December, '72) as against Rs. 293.27 million during the corresponding period of the preceding year. The figure for the entire year of 1971-72 was Rs. 401.48 million.

Quantitatively, the exports during the period under review of 1972-73 amounted to nearly

664,900 tonnes against 550,046 tonnes in the corresponding period of 1971-72.

Among the oilcakes exported during the period of review in 1972-73, solvent extracted groundnut oil cake was the most important one. This variety earned as much as Rs. 340.78 million in foreign exchange. Quantitatively, the export amounted to 503,656 tonnes. Poland with an intake of 92,776 tonnes at Rs. 63.92 million emerged as the major buyer. The second important purchaser was Japan which imported 77,410 tonnes for Rs. 56.55 million, followed by U.K. at 83,287 tonnes (Rs. 51.71 million) U.S.S.R. 61,872 tonnes (Rs. 43.54 million), Hungary 48,696 tonnes (Rs. 33.43 million), German Democratic Republic 33,512 tonnes (Rs. 21 million), Netherlands 29,769 tonnes (Rs. 20.89 million), Czechoslovakia 31,841 tonnes (Rs. 19.88 million) and German Federal Republic 16,055 tonnes (Rs. 10.40 million). Bulgaria, France and Thailand were the other important buyers.

Next to groundnut oilcake, decorticated solvent extracted cottonseed oilcake and solvent extracted linseed oilcake were the other important varieties contributing to the export earning of oilcakes and meal. These varieties earned Rs. 45.63 million and about Rs. 8 million respectively. In order of the value of exports effected, Poland, Czechoslovakia, U.S.S.R., German Democratic Republic, Bulgaria, Rumania and Hungary were the important destinations for decorticated solvent extracted cottonseed oilcake, while Czechoslovakia, Poland and German Democratic Republic were the major importers for solvent extracted linseed oilcake.

The contribution of other important oilcakes was : solvent extracted kardi oilcake Rs. 10.23 million; decorticated expeller cotton-seed oilcake Rs. 0.86 million and solvent extracted oilcake of copra Rs. 1.41 million.

FACTS ON MICA EXPORTS

India's export trade of mica and mica products totalled 19,670 tonnes at a value of Rs. 16.43 million in the first three quarters of 1972-73. In the full year of 1971-72, the export was of the order of 22,955 tonnes which brought in foreign exchange worth Rs. 17.57 million. Of these exports, the share of processed mica was as much as 16,690 tonnes valued at Rs. 14.14 million in the first three quarters of 1972-73, while it was of the order of 19,635 tonnes valued at Rs. 15.23 million in 1971-72. The rest of the export in these years emerged from mica products.

Exports of processed mica were canalised through the Minerals and Metals Trading Corporation of India effective from January 1972. The objective for canalising the exports was not only to boost up mica supplies abroad but also to help the small mine owners, processors and exporters in participating in the mica export trade. In order to improve competitive position of this mineral vis-a-vis other products as well as synthetic substitute, floor prices of the export products have been fixed. The floor prices were recently revised and export duties leviable on various varieties and grades of mica were suitably reduced.

Total production of mica in India was 18,065 tonnes in 1972, 13,704 tonnes of crude mica and the rest being mica scrap.

Mica mines are mainly situated in the States of Bihar, Rajasthan and Andhra Pradesh.

EXPORT TRADE IN TYRES AND TUBES

India's exports of tyres and tubes for vehicles and aircrafts amounted to Rs. 57.20 million during the first three quarters of 1972-73 (April-December 1972). In the entire preceding year of 1971-72, the exports fetched as much as Rs. 70 million. In fact, the exports rose to this level from Rs. 41 million in 1969-70 and Rs. 55 million in 1970-71.

During the first three quarters of 1972-73, tyres of all types earned Rs. 51.50 million while the share of tubes accounted for Rs. 5.70 million.

Tyres for trucks and buses constituted the largest single item which netted foreign exchage in bulk at a value of Rs. 36.95 million (133,700 numbers). Yugoslavia was the biggest buyer of Indian tyres which imported at a value of Rs. 13.93 million. The second best buyer was Czechoslovakia. It purchased worth Rs. 8.80 million, followed by Iraq at Rs. 3.22 million, USSR at Rs. 2 million, Korea Democratic Republic at Rs. 1.60 million, Kuwait at Rs. 1.37 million and Sudan at Rs. 1 million. U.K., Korea Republic, Arab Republic of Egypt, Ethiopia, Nepal, Bangladesh, Saudi Arabia and Qatar were prominent among other buyers.

Tyres for off-the-road vehicles was the second important variety having fetched Rs. 4.80 million. Yugoslavia and Korea Democratic Republic were the main markets, which imported in bulk at Rs. 1.95 million and Rs. 1.60 million, respectively.

Tyres for cycles was yet one more variety active in exports during the period under review. It secured Rs. 3.40 million. Quantumwise 0.65 million numbers of tyres were supplied overseas. The leading purchasing countries included U.S.A., Bangladesh, Guyana, Peru, Puerto Rico and Trinidad.

Besides these principal varieties, the export value of other categories of tyres was: Rs. 2.05 million for motor tyres; Rs. 1.18 million for tractor tyres; Rs. 1 million for tyre flaps and Rs. 2.10 million for tyres for other vehicles. Yugoslavia, Czechoslovakia, Nepal, U.S.A., U.K., Arab Republic of Egypt, Bangladesh, Iraq and Sudan were the significant markets.

In the category of tubes, tubes for trucks and buses was the principal variety of export. Its export value amounted to Rs. 3.51 million. In terms of quantity 0.14 million tubes were supplied overseas. Yugoslavia was again the topmost buyer having bought at Rs. 1.21 million (44,114 numbers), followed by Czechoslovakia (Rs. 0.88 million), Kuwait (Rs. 0.25 million), Iraq (Rs. 0.25 million), U.K. (Rs. 0.23 million), Sudan (Rs. 0.15 million) and U.S.A. (Rs. 0.10 million),

Tubes for bicycles earned Rs. 1.43 million. U S.A , Afghanistan, Yugoslavia, Guyana, Peru, Sri Lanka and Bulgaria were the other prominent absorbing countries.

Besides these varieties, tubes for motor cars, tubes for motor cycles, tubes for off the road vehicles, tubes for tractors and for other vehicles were the other categories exported.

EXTERNAL TRADE REVIEW OF S.T.C.

The total exports of S.T.C. and its subsidiaries are estimated to have earned foreign exchange at a value of Rs. 1882 million during 1972-73, registering a sharp increase over that of the preceding year at Rs. 980 million. Interestingly, the import bill during the year registered considerable saving at Rs. 1927 million from Rs. 2218 million in the previous year. The total turnover including domestic trade of the entire group (STC and subsidiaries) was of the order of Rs. 3978 million (1972-73) as compared to Rs. 3326 million in the preceding year.

The targets for 1973-74 have been set at Rs. 2919 million for exports; Rs. 2535 million for imports and Rs. 5553 million for total turnover.

STC's own export performance during the year under review registered more than 100 per cent increase as compared to the preceding year. The exports fetched Rs. 1680 million as against Rs. 780 million. Of these, exports worth Rs. 1026 million were effected to hard currency areas while those worth Rs. 598.8 million were directed to the rupee trade areas. For 1973-74, the export target has been placed at Rs. 2250 million.

The increase in the total exports by the group was noticeable mainly because of canalisation of leather exports. It helped to boost the exports of the group from the estimated level of Rs. 120 million to Rs. 780 million. The decrease in the import bill was mainly attributed towards reduced imports of edible oils and fats because of cutting of PL 480 assistance and rise in the international prices. Tractor imports were also lower during the period.

Out of STC's own exports (Rs. 1680 million), the share of small scale sector was of the order of Rs. 1170 million. During the previous year, its share amounted to only Rs. 360 million (through STC). Of the total targetted figure of export of STC individually at Rs. 2250 million during 1973-74, the share of small scale sector has been estimated at Rs. 1720 million.

M/s. Projects and Equipment Corporation, a subsidiary of the STC, is making good headway in the field of turnkey assignments abroad. It has already submitted profiles of five industries to Peru and Colombia in collaboration with the National Industrial Development Corporation (NIDC) for turnkey jobs in industries such as black pipes, heavy engineering, heavy electricals, heavy plates and vessels and ascorbic acid.

The STC and its subsidiaries have to their credit introduction of some new items in export markets in recent years. These include vegetables, fruits, canvas shoes, rayon tyre cord, cosmetics, cigars, blades, leather goods and coffee. The group has now entered into trade relations with U.S.A. and U.K. in respect of jute goods, with Poland in processed foods, with Lebanon in tea, with Bangladesh in cement and with South Korea in finished leather. The group now exports shoes to Poland, leather goods to Bulgaria, France, Poland and the German Democratic Republic and castor oil to Japan, U.S.A. and U.K. As regards imports, the group handles now 150 items in place of 84 items three years before. Of these, 105 are canalised items and 45 non-canalised items.

EXPORT TREND IN SOAPS AND CLEANSING PREPARATIONS

From Rs. 9.25 million in the first three quarters of 1971-72 (April-December 1972), the export earning of soaps, cleansing and polishing preparations improved to Rs. 11.25 million in the comparable period of 1972-73..

The exports in the line are constantly witnessing uptrend from year to year—Rs. 15.20 million in 1971-72, Rs. 9.50 million in 1970-71, Rs. 8.45 million in 1969-70 and Rs. 7.77 million in 1968-69.

During the period under review of 1972-73, surface acting agents–washing preparations - constituted the major category of foreign exchange earning. It earned Rs. 6.05 million. Of this, synthetic detergents alone netted Rs. 5.80 million while washing preparations (whether containing soap or not) brought in Rs. 0.27 million. Quantumwise 2.27 million Kgs. of synthetic detergents were supplied to overseas markets.

USSR was the largest single buying country for detergents which imported the bulk (2.12 million kgs.,) at a cost of Rs. 5.46 million. Next to USSR, Nepal was the second best destination. For washing preparations too, USSR was the main absorbing country.

Soaps constituted the second important category which secured Rs. 4.80 million. In terms of quantity, 1.26 million kgs. were supplied abroad. Various types of soaps, such as household laundry soap, toilet soap (other than dental soap), medicated soap, tablet cakes, flake chips and powder, bar and blocks and other varieties were the active export items in the line. Afghanistan was the main buyer of household laundry soap while Nepal, Thailand, Afghanistan and Denmark were the significant importing countries for toilet soap.

Polishes, pastes, powders and preparations constituted yet one more category active in export trade. Polishes for application to leather and metal and abrasives in packs were mainly exported to Thailand, Hong Kong, Afghanistan, Sri Lanka, Czechoslovakia and Iran.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

INDIAN ASSISTANCE TO PHILIPPINES RAILWAY PROJECT

Indian cooperation and assistance in the development of the Philippine National Railways, particularly the project for providing suburban transport facilities in the Manila area, were recently assured to the General Manager of the Philippine National Railways during his visit to India.

India has expressed its willingness to depute a team of railway experts in various fields to Philippines to prepare a report for the Manila Suburban Project, explaining that it has developed substantial manufacturing capacity for electrical multiple unit coaches.

In fact, India is already providing cooperation to the Philippine National Railways. In 1970, an Indian Railway's technical team visited Philippines to advise the Philippine National Railways on their rehabilitation and development programmes. Another team went to Philippines in the same year to assess the damage done by typhoon to the railway system and to recommend measures for its rehabilitation.

At present, an Indian Railway Mechanical Engineer is working as consultant to the Philippine National Railways.

The Philippine Railways have also shown interest in the purchase of coaches built by the Integral Coach Factory, Madras and have quoted for 30 economy class coaches. Enquiries for further supply have also been received.

STEPS TOWARDS CREDIT CONTROL

In a bid to limit the credit availability in the banking sector, the Reserve Bank of India has recently announced a two per cent increase in the cash reserve ratio of scheduled commercial banks. The ratio which prescribes the statutory proportion of deposits that the commercial banks must keep with the RBI is to go up from 5 per cent of their demand and time liabilities to 7 per cent in two stages, each by one percentage, effective from September 8 and 22, 1973 respectively. This step is expected to secure Rs. 2200 million of idle bank deposits.

A similar volume of deposits was impounded by the Reserve Bank when it announced an increase in the cash reserve ratio from 3 per cent to 5 per cent, effective from June 29, 1973.

The deposits to be impounded in September this year ought to remain with the RBI for one year (till September 27, 1974) and on these deposits the commercial banks would be paid interest at the rate of 4 75 per cent per annum, a rate of interest similar to the one payable on the deposits impounded in June this year.

As a corollary to the proposed increase in the cash reserve ratio in September, minimum net liquidity ratio which governs how much the commercial banks might borrow from the Reserve Bank at the bank rate has also been raised from 39 per cent to 40 per cent, effective from September 8, 1973.

In a letter to the scheduled commercial banks, the Reserve Bank of India's Governor stated that with money supply increase touching a level of about 17 per cent more than a year ago, the overall monetary situation in India would call for vigilance. In recent months, not only the governmental borrowing from the Reserve Bank has increased at a high rate by way of deficit financing but also the rate of bank advances to the corporate sector has gone up. In view of the sharp increase in the price level (the wholesale price index having gone up by about 25 per cent compared to a year ago), the Government of India have decided to curtail government expenditure of about Rs. 4000 million.

Prior to the announcement of the changes in the cash reserve ratio of commercial banks in September and June this year, the Reserve Bank of India have also increased the level of bank rate from 6 per cent to 7 per cent, effective from May 31, 1973. The bank rate is a discount rate at which the Reserve Bank is prepared to buy or discount bills of exchange or other Commercial Papers. It is also the lending rate at which the Reserve Bank makes advances to commercial banks. The announcement for increasing bank rate was with a view to restrain fixed investments, excessive building of inventories and tightening of credit availability.

The Reserve Bank is authorised to vary the minimum cash reserve ratio of commercial banks within the limits of 3 per cent to 15 per cent.

SKETCH ON AERONAUTICS IN INDIA

India's aeronautical industry has come of age. Besides meeting bulk of the domestic requirements, the industry has even entered the export markets, though on a limited scale. M/s. Hindustan Aeronautics Limited (HAL), Bangalore, improved its export performance from Rs. 1.13 million in 1971-72 to about Rs. 2 million in the following year.

The increase in the export turnover of HAL during 1972-73 over that of the preceding year is mainly attributed to the diversified range of production which covers aircrafts, parts and components catering to needs of defence and aviation sectors. As a result of participation in some major international fair shows, HAL received a large number of enquiries from abroad.

During 1972-73, HAL manufactured aircrafts and other defence and aviation items to the tune of Rs. 791 million, registering about 14 per cent increase over the production during 1971-72 at Rs. 696 million.

The range of manufactures of HAL today includes aircrafts of various types catering to the needs of defence, aviation and agriculture. In recent years, it switched over to the manufacture of modern and sophisticated aircrafts. It is soon to commence production of GNAT MK–II and HE–24 HK II aircrafts.

HAL'S Nasik Division which is engaged in the production of MIG 21 aircrafts has turned out improved versions of aircrafts and its Bangalore Division has commenced production of helicopters under the name of 'CHEETAH'. Its accessories factory, presently under construction at Lucknow, is to manufacture aircraft accessories including wheels and brakes, hydraulic equipment, fuel system, ejection seats and aircrafts instruments. Additionally, it is also proposed to manufacture at the Lucknow Plant a wide range of accessories to be used in the manufacture of MIG 21 aircrafts.

Besides aircrafts and accessories, HAL also manufactures VHF communication equipment, automatic direction finders, and radio beacons in collaboration with U.S.S.R., Czechoslovakia and Italy.

To encourage subcontracting system, HAL took initiative to set up an ancillary estate at the Hyderabad Division. It has active plans to set up another such estate at its Bangalore Division.

ROLE OF INDUSTRIAL ESTATES IN INDUSTRIALISATION

Among the major developing economies of the world, India commands a prime position in regard to the establishment of industrial estates. During the last 15 years, 527 industrial estates were sponsored all over the country. Of these, 427 have been completed having the facilities of electricity, water and other necessary requisites. Of the completed estates, 366 have actually started functioning with 6202 factories. The total investment cost in their construction reached the Rs. 450 million mark during the last one and half decade. These produce goods worth Rs. 1500 million per annum, employing over 104,913 persons.

The main objective of setting up such industrial estates throughout the country is to provide them requisite facilities such as, water, electricity, transport, post office, canteen etc., thereby creating an atmosphere conducive to the growth of small scale units. Besides, putting these different industrial units together at a place also facilitates establishment of common facility servicing centres, introduction of modern techniques, collective purchase of raw materials and sale of finished goods. These estates prove a boon, particularly in those areas which are backward, small and having rural population as they serve as centres of industrial activity and development. These estates also serve effectively in developing subcontracting relationship between small and large scale industries and specialised manufacturing activities.

The programme of setting up industrial estates in the country received good encouragement during the preceding Five-Year Plans and particularly during the Second Five-Year Plan. During the plan period, a big demand for factory accommodation was noticeable all over the country. It is during this period that a provision of over Rs. 111 million was made. During the Third Plan period, the amount was increased to Rs. 302 million. During this Plan, the States were entrusted with the responsibilities of acquiring land in urban and industrially advanced areas and to provide developed sites and common facilities for the entrepreneurs to construct their own factory buildings. During the Fourth Plan, Rs. 191 million were allocated (provisional) for the development of industrial estates. The amount was to be utilised for consolidation of estates already sponsored and for setting up new estates primarily in backward districts, small towns and rural areas.

According to the policy decided during the Third Five Year Plan, many of the industrial estates constructed under the Government Programme were located at small towns and in rural areas. Of the 366 estates that have actually started functioning, 161 are located in urban areas while 114 are in semi urban areas and 91 in rural areas. Besides, out of 10,317 sheds built in the industrial estates, 8,267 have been occupied. Majority of the industrial units in the industrial estates are engaged in mechanical and general engineering industries; next in importance are electrical engineering industries. Production of other units engaged in wood working, ceramics and leather goods is relatively small. The recent years have witnessed the factories in estates undertaking manufacture of a variety of items. A sizeable number of these are engaged in the production of sophisticated items produced on modern machinery. Today, some of the modern equipment, such as electric transformers, air-conditioning equipment, tape recorders, cycle dynamos, air brake, switches, switchgear boxes, surgical adhesive tapes, surgical instruments, synthetic resins, miniature valves and sealed beam head lamps are manufactured on extensive scale in these estates. Interestingly, even those new items which were not being manufactured in the country hitherto and were being imported, are being manufactured in these industrial estates by small scale units.

In addition to the industrial estates set up by the Government, a large number of estates have been built by co-operatives and joint stock companies. Even commercial banks, against the guarantee of the State Governments, provide loans and financial assistance for setting up these estates. The Life Insurance Corporation is also providing finance to cooperatives and joint stock companies for this purpose.

Cooperative industrial estates have come up in the States of Gujarat, Maharashtra, Madhya Pradesh, Tamil Nadu and Uttar Pradesh. In Maharashtra, 33 cooperative industrial estates are functioning and 26 are in various stages of construction. In Gujarat, 6 cooperative estates are functioning and 5 more are being constructed. In Tamil Nadu, 4 estates of this kind are functioning and one is under construction while in Rajasthan and Uttar Pradesh one such estate is functioning in each State.

The recent trend in setting up these estates is for one particular industry, in addition to the general purpose estates. This is mainly aimed at providing accommodation to a variety of small scale industries. Accordingly, functional industrial estates have been encouraged in such lines of manufacture as electronic components, agricultural implements, automobile parts, machine tools, radio components, clocks, time pieces and watches, rubber and plastic chemicals, ceramic and leather.

Further, various measures are being taken by the Government of India for promotion of small scale units as ancillaries to large undertakings. One of such measures relates to setting up of ancillary units in industrial estates located near large factories. The large scale units give technical guidance and also raw materials to such units, whenever necessary. Such examples of ancillary estates successfully functioning are found near M/s. Hindustan Machine Tools, Bangalore, Heavy Electricals (India) Limited, Bhopal, Heavy Engineering Corporation, Ranchi, Bharat Electronics Limited, Bangalore and Hindustan Steel Plants.

Achieving such a progress in the line, the future policy aims at consolidation of the existing industrial estates for their fullest utilisation rather than expanding them. Reviewing the strides made by the industrial units operating in industrial estates all over the country in the fields of production and exports, it can be said that these estates have proved to be very effective tools for development of small industries and for transforming the agrarian sector into a vital industrial one.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PRESTRESSED CONCRETE SLEEPERS

The Structural Engineering Research Centre (SERC), CSIR Campus, Adyar, Madras-20, has developed a process for the production of prestressed concrete monoblock broad gauge sleepers for Railways.

Prestressed concrete sleeper is a highly sophisticated product and is different from other prestressed concrete units, particularly in its production technology.

At present, mainly two methods are adopted in the country for the manufacture of sleepers by pretensioned method, namely, 'Long-line method' and 'Stress-bench method'. The process developed by SERC is based on 'long-line method'. These sleepers are useful and economical in preference to timber sleepers and steel sleepers due to better consistency in quality obtained in their production and performance, long service with almost negligible maintenance costs and inherent suitability for use with long-welded tracks carrying heavier axle loads at high speeds.

Nearly one million concrete sleepers are needed annually by the Indian Railways who are the sole consumers of the product. The demand is expected to increase in the coming years due to the conversion of large stretches of metre-gauge track into broad-gauge track and the laying of rail links.

The production process developed by SERC involves quite a few working phases, namely, preparation of high tensile steel wires and mild steel reinforcement; cleaning of moulds, aligning and positioning of inserts and mild steel reinforcement; stressing the high tensile steel wires or strands; pouring concrete into the moulds; compacting; steam-curing; detensioning and demoulding and testing.

Full scale laboratory investigations have already been completed. About 200 sleepers have been produced in the laboratory under factory conditions to ascertain their suitability for mass production.

The main items of raw materials required in the process are well graded metal from 6 mm to 20 mm size, well graded sand free from organic and other impurities, portland cement, high tensile pre-stressing wire and water free from impurities. The major items of equipment required for the production of prestressed concrete sleepers are stressing unit for wires/strands, concrete batching and mixing plant, platform scales, overhead-electric hoist, mobile electric hoist, high frequency vibrators, steam boiler, pressure gauges, steam curing hood, diesel operated fork lift trucks, compression testing machine, oxy-acetylene gas cutting machine, portable driller, pedestal grinder, power hacksaw, welding equipment and accessories. All these are available indigenously.

TRANSDUCERS FOR ULTRASONIC APPLICATIONS IN AIR

The National Physical Laboratory (NPL), Hillside Road, New Delhi, has developed a method for fabrication of the transducers capable of sending and receiving ultrasonic waves in air.

These transducers can be used in a variety of applications of automation, sensing and in various remote control applications. One typical use of these transducers would be in automatic counting of packages on the conveyer line. Similarly, these transducers can be used in a number of other applications such as, detection, alarm systems, liquid level control, automatic door opener, size control, automatic length control, positioning, package routing, motor vehicle detection, etc. These transducers are specially useful where ordinary photo cells, operated by a beam of light cannot be used. These transducers are also finding wide applications as a source of ultrasonic waves in air in performing a number of experiments in laboratories.

The device developed by NPL consists of a polarised Pzt disc which has two semi-circular electrodes on one face and a single circular electrode with a metallic disc fixed on it, on its other face. This bilaminar transducer oscillates in flexural mode and is housed in a metal casing-aluminium or brass.

These transducers are capable of sensing liquids or solids, ferrous or non-ferrous metals, opaque or transparent materials at a wide range of distances. The ambient conditions such as, humidity, fog, smoke or dust-laden atmosphere, high or low intensities of light or total darkness do not affect the functioning of the system. The transducers can be designed to have a desired frequency between 25 kc/s to 50 kc/s range.

NPL has prepared two dozen transducers and one control unit and have also supplied the transducers to some users. No work has been done on a pilot plant basis.

The main items of raw materials required for the manufacture of these transducers are Pzt discs, aluminium discs, adhesives and cleaning liquid. All these are available indigenously.

DEFENCE EQUIPMENT INDUSTRY

A REVIEW

From the position of a net importer of even simple manufactures till Independence, India over the years has made appreciable strides towards self-sufficiency not only in the field of consumer and industrial goods but also in a complete range of defence equipment very much needed to safeguard its independence. Today, the country is in a position to manufacture most of the defence equipment excluding a few items that are required to be imported. The defence production sector of the country has to its credit manufacture of a wide range of defence equipment including the sophisticated ones which are usually manufactured by the industrially advanced economies of the world. In fact, among the developing countries, India is perhaps the only country which has developed capability to undertake production of these items in such a large volume and range.

The broad range of defence equipment produced by the country includes aircrafts of various types and specifications, warships equipped with modern weapons, defence electronics equipment, tanks of different types, sophisiticated armaments including ammunition and earth moving machinery. All the defence items manufacturing units are in the public sector. Presently, there are eight public sector undertakings engaged in defence production. Their total production during 1970-71 was of the order of Rs. 1610 million. The estimated value of the production during 1971-72 and 1972-73 is placed at Rs. 1790 million and Rs. 2275 million respectively. M/s. Hindustan Aeronautics Limited (HAL), M/s. Bharat Electronics Limited (BEL), Mazagaon Dock, M/s. Garden Reach Workshops, M/s. Bharat Earth Movers Limited (BEML) and M/s. Bharat Dynamics Limited are the major public sector units in the line in the country. These are mainly engaged in the production of aeronautical items, electronics, ship-building, heavy earth moving equipment and missiles. Almost all the undertakings were established in the post-independence period. M/s. Bharat Dynamics Limited was set up very recently in 1970-71. It is mainly engaged in the production of anti-tank missiles.

Aeronautics is a vital sector in the whole defence infrastructure. Although the foundations of the aircraft industry were laid wayback in 1940, it was only during 1964 that M/s. Hindustan Aeronautics Limited emerged on the industrial map of India as a fullfledged unit. HAL, today turns out Jet Ground attack fighter-HF-24, supersonic intercepter-MIG-21, Jet fighter Gnat aircraft and a number of other aircrafts catering to the requirements of training and transportation including helicopters and a large range of ancillaries and parts required in the fabrication of these aircrafts. Recently, HAL has undertaken the manufacure of the advanced versions of Mig 21 supersonic intercepter in collaboration with U.S.S.R. and helicopter 'CHEETAH' in collaboration with France. Besides this main line of manufacure, it also produces VHF communication equipment, automatic direction finders, radio alternators and radio bacons. During 1971-72, HAL produced aircrafts and defenceware at a cost of Rs. 696 million and during 1972-73 at Rs. 791 million.

HAL is constantly expanding in recent years. It is having units in Hyderabad, Nasik, Koraput, Bangalore and Kanpur.

In the field of defence electronics, M/s. Bharat Electronics Limited (BEL), Bangalore, which was established in 1954, is leading the country towards self-sufficiency. Its range of manufacture includes electric and electronics equipment required in the Defence services, such as radars, transmitters/receivers, transceivers and fire control and other radars for the use of defence services as well as civil departments and a large number of electronics equipment in various frequencies and ranges. Besides, BEL's Components Division is producing a comprehensive range of specialised components, such as receiving valves, germanium/silicon transistors, transmitting tubes, magnetrons, TV picture tubes and cathode ray tubes. According to its expansion plans, BEL is soon to set up its second unit at Ghaziabad in Uttar Pradesh for the manufacture of sophisticated radar and microwave equipment. BEL which was originally planned for the production of defence equipment at an estimated cost of Rs. 42.5 million annually, is now to raise its production to the tune of Rs. 300 million worth per year. Its Hyderabad Division which is currrently manufacturing electronics equipment is to commence shortly production of different equipment required for defence purpose. During 1971-72, the cost of entire defence production by BEL was of the order of Rs. 226

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million. The production during 1972-73 was estimated at Rs. 240 million.

Building of warships for defence and transportation is one of the most significant activities for which sufficient capacity has been built up within the country, particularly in the post independence period. M/s. Mazagaon Docks Limited, Bombay, one of the leading shipbuilding establishments in the country, is mainly engaged in construction of ships and repairing activities. After nationalisation of shipbuilding industry in 1960, the Dock's capability in building destroyers, frigates, passenger ships, cargo ships, dredgers, tugs, barges, trawlers, launches, floating docks and assault boats has been enhanced considerably. The dock has on hand orders for six Leander class Frigates for Indian Navy. Of these, one has recently been commissioned and handed over to the Navy. Besides, it has already delivered one bucket dredger, two inshore minesweepers and two AVCAT tankers to the Navy. It is also engaged in ship repairing activities to earn considerable amount of foreign exchange every year. For instance, during 1970-71, it repaired 200 foreign ships and fetched foreign exchange at a value of Rs. 17 million as against 222 ships at a cost of Rs. 12.10 million.

In the field of earth moving equipment which is mainly used in civil construction as well as in defence work, M/s. Bharat Earth Movers Limited (BEML) is making vital contribution. The range of manufactures of BEML includes a variety of earth moving equipment that is necessary for the construction of roads, dams and even airstrips. Established in 1964, BEML, during the short span of only 8 years increased its turnover eightfold and even started exporting these equipment to overseas markets in the recent years.

The product range of the Bangalore firm includes buldozers in various ranges; rear dumpers in the rage of 25 tonnes, 35 tonnes and 50 tonnes; motor graders in 12 mouldboard 115 HP, scrappers (285 FHP); front-end loaders with alternative buckets of 1.5 and 2.3 cubic metres heaped capacity and railcoaches. The firm has so far, produced 282 numbers of buldozers of 90 HP; over 502 numbers of buldozers of 165 HP; over 2 numbers of buldozers of 180 HP; over 154 numbers of buldozers of 250 HP; over 64 numbers of buldozers of motor graders of 115 HP; over 180 numbers of 'C' tournapull scrappers of 290 and 307 HP; over 240 numbers of Haulpak dumpers of 25 tonnes, 35 tonnes and 50 tonnes capacity and over 136 numbers of tractors with 1.3 cubic metres shovels and other attachments. During, 1971-72, total turnover of the unit exceeded the Rs. 350 million mark, registering an impressive rise of about 33 per cent over the turnover of the preceding year at Rs. 266 million.

The import content in the equipment manufactured by the establishment is very small and only a negligible percentage of components is being imported from abroad. In the production of railcoaches, almost cent per cent indigenous material is used. The future plans of the firm indicate that it is soon to undertake manufacture of 50 ton capacity off–the–highway rear dump trucks and similar rear dump trucks of 25 ton capacity.

M/s. Garden Reach Workshops, Calcutta, is contributing to the defence effort of the country by way of undertaking production of marine diesel engines, among others, by setting up a factory at Ranchi in Bihar. The production of marine engines at this factory has already been commenced. Its modernisation and expansion plans costing about Rs. 80 million, will enable it to undertake the construction of ocean going vessels in a range of 15,000 DWT to 25,000 DWT.

India's capability in the defence production has reached to the extent of releasing sizeable surplus for export to the markets overseas. The country has almost become self-sufficient in the equipment catering to the needs of each wing of Defence. □

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EXPORT PROGRESS AND DIVERSIFICATION

STORY OF AN EXPORT HOUSE

From Rs. 2.5 million in 1962-63, M/s. Tata Exports Ltd., Shivsagar Estates, Annie Besant Road, Worli, Bombay, succeeded in raising their exports to Rs. 174.50 million in 1971-72 and Rs. 233.30 million in 1972-73. The total foreign exchange earning of the company so far, since its inception as an export house in 1962, amounts to more than Rs. 1200 million. Its consistent success on export front has enabled the company to receive three National Awards from the Government of India. Recently it won the challenge Trophy of the Engineering Export Promotion Council for the highest export performance in engineering goods in 1970-71.

The exports of the company cover a wide range of products from 150 manufacturers in India and are supplied to over 100 overseas markets. The outstanding export contracts bagged by them include the one valued at Rs. 70 million for supply of rails and accessories to the Union of Burma Railways. The supplies against this cover the products of M/s. Tata Iron and Steel Co. Ltd., Guest Keen Williams Ltd., Hindustan Iron and Steel Co., Burn and Co. Ltd. and Alcock Ashdown and Co. Ltd.

The other outstanding achievements of the company relate to supply of 150 buses to Bangladesh, 107 vehicles to Uganda and the supply of 53 completed luxury buses together with spare parts to the Democratic Republic of North Korea.

Creditably, the company has recently concluded an agreement with Guyana in South America for delivery of 60 special type buses to that country. This is reported to be India's largest single export order secured from the South American continent, considerably improving India's trade with that country. As agents of the Government of Qatar for servicing their purchases in India under the commodity agreement between India and Qatar, Tata Exports have assisted in facilitating exports against Qatar's sterling balances in India.

M/s. Tata Exports are also among the first few who pioneered Indian exports on a commercial scale in items like electrical cables, steel pipes and conduits, pressed steel tanks, commercial vehicles, bus bodies and other automotive products, passenger railway coaches and accessories, bridge girders overhead cranes, sluice gates, transformers and switch gears, refractories, pressed tools and fork lift trucks.

The commodities handled by the company are not limited to the products of Tata Group but as stated above, also export items produced by other reputed manufacturers. Besides facilitating the export of concerned manufacturers, they are also assisting them with recommendations on quality and packaging improvement, special market feedback information, booking of forward orders and guidance in the procurement of raw materials. A few years back, they set up a showroom displaying under one roof products available for export. This has proved very popular with the interested overseas parties visiting India. Future plans of the firm include identifying areas for turnkey projects and joint ventures abroad and setting up and promotion of export oriented manufacturing units.

The company is divided into a number of divisions each concentrating on an allied group of products. These divisions pertain to automobiles, steel and engineering, power and transmission, chemicals and textiles. In addition, the Development and General Trading Division of the company concentrates on development of new ideas and products, for exports. This Division also handles consumer products, such as instant tea, shrimps, soaps, fruit juices, transistor radios, typewriters and cosmetics.

Though initially the firm's exports were directed to only a few countries like Cambodia and South Vietnam, their export supplies have now reached the South East and West Asian Markets as well as the continents of Africa and Europe. Apart from companies of Tatas in the U. K., Switzerland and U. S. A., assisting export promotion of various Indian products, residential representatives of Tata Exports also operate from Europe, West Asia, Africa and South East Asia.

CERAMIC CAPACITORS TO U.S.A.

A sizeable export order for ceramic capacitors has been secured by M/s. Bharat Electronics Limited (BEL), Bangalore recently from the United States. In terms of quantity, BEL is to supply 5 million pieces of these capacitors to U. S. A. BEL's electronic items are eagerly sought by overseas markets including the developed ones because of their high quality, price competitiveness and efficient marketing ability.

In the field of electronics, BEL is making significant strides in production as well as in exports in recent years. During 1972-73, its exports reached the Rs. 10 million mark. The exports during the year were mainly

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directed to U.S.A., U.K., Canada, Federal Republic of Germany, Spain, Australia, New Zealand, Singapore, Thailand, Malaysia, Greece, Iran, Kenya, Zambia, Brazil, Argentina and Nepal.

The range of manufactures of BEL today includes transmitters in different ranges, receivers, radars, long distance commmunication equipment, electron tubes, germanium and silicon semi-conductors, piezo-electric crystals, capacitors, measuring instruments, transformers and coils. Since its inception in 1954, it has added 250 diverse products to its production line. It has to its credit the addition of several new products to production range every year. Recently, it introduced silicon devices for TV receiver sets, power switching transistors, special high voltage current capacitors and a comprehensive range of components.

During 1971-72, BEL produced electronic goods valued at Rs. 328 million. In fact, the production rose to this level from only Rs. 0.6 million in 1956-57. BEL's second unit, presently being set up at Ghaziabad in Uttar Pradesh is expected to go on production stream shortly.

TEXTILE MACHINERY TO WORLD MARKETS

India's textile machinery enjoys worldwide popularity. The industry has increased and diversified its production substantially. Its contribution on export front is encouraging. The industry has now come to undertake know-how exports also, besides undertaking turnkey assignments abroad.

The large volume of export business of M/s. National Machinery Manufacturers Limited (NMM), Kalve, Thana, Bombay, is an instance of the rapid strides made by this sector. This single concern recently secured three sizeable export contracts valued at as much as Rs. 70 million from South Korea, Taiwan and some other countries for the supply of spinning and weaving machinery to these markets. The interesting feature of the contract bagged from South Korea is that the same was secured in the face of stiff international competition. The first consignment against this order was despatched recently. This is the first ever export contract secured by NMM from that country. In the earlier years, its machinery was mainly absorbed by Arab Republic of Egypt and Sudan. The firm has active plans to introduce its textile machinery to a number of sophisticated textile producing countries.

The range of export of textile machinery to South Korea comprises of Superspinners-a compact narrow width and highly sophisticated ring spinning frame; Automatic looms-high speed machines with an efficiency rating of over 94 per cent precision built for greater life span, increased production and low maintenance; Draw frames-capable of sustaining high speed production of top quality slivers of exceptional regularity; Carding engines-with rigid framing, ensuring freedom from vibration and use of antifriction bearings providing smooth running facilitating, accurate setting and eliminating routine lubrication and Ring doublers—highly efficient for wet or dry doubling to provide improved performance on all types of fine, medium and coarse counts and other machinery, spares and components.

Besides these contracts, a large number of enquiries have been received by the firm from the other countries too.

At domestic level also, the firm booked an order for nylon draw twister from M/s. Century Enka and negotiations for other orders are under way. Further, orders valued at over Rs. 21 million from M/s. Garware Nylon are under negotiations. At present, about 30 per cent of the total installed capacity of the firm is being utilised for exports and within a course of time, the same is expected to go up to a level of 50 per cent.

The firm's expansion plans include a project for the manufacture of machinery for the synthetic fibre industry at Baroda (Gujarat) at an estimated cost of about Rs. 23.70 million. M/s. Barmag Barmar of the Federal Republic of Germany, a well know manufacturing concern in the line is to collaborate with the Bombay firm. The project is expected to commence production by the end of 1973 and actual deliveries of machinery are expected to take place by April 1974. The licensed capacity of the Baroda plant is of the order of 10 take-up machines, 15 cold setting draw twisters and 300 texturising machines per annum. The plant's total turnover in 1974 has been estimated at Rs. 20 million and is expected to go up to a level of Rs. 80 million by 1976.

The firm's expansion of exising capacity of the Kalwe Plant and that of the proposed Baroda project put together will considerably enhance the company's turnover to the tune of Rs. 100 million in 1973 and Rs. 200 million in 1976 as compared to about Rs. 80 million in 1972. It has recently received letters of intent to manufacture 60 combers, 120 fly frames, 180 open and spinning machines, 600 hydraulic infinitely variable gear boxes, 300,500 spindle inserts and 6 million needle bearings. In addition to this, it has applied for licences for the manufacture of 12 lines of blow room machinery, 10 pressure die casting machines and 80 tyrecord twisters and cablers, besides paper printing machinery.

The total installed capacity of the textile machinery sector is of the order of Rs. 450 million per annum while the licensed capacity is about Rs. 670 million. During 1971, the textile machinery sector produced machinery to the tune of Rs. 350 million.

During 1971-72, the exports of textile machinery amounted to Rs. 49 million. The items of exports included spinning ring frames, non-cotton textile fibre processing machines, cotton spinning and weaving machines, automatic machines, textile dressing machines and a comprehensive range of accessories of textile machinery. Arab Republic of Egypt, Malaysia, Indonesia, Poland, Iraq, Sri Lanka and UK were the main buyers.

During the first-three quarters of 1972-73 (April-December 1972), the exports fetched foreign exchange at a value of Rs. 26 million. Arab Republic of Egypt, Sudan, Czechoslovakia, Bangladesh, Sri Lanka, German Democratic Republic, Nigeria, Rumania, Syria and Uganda were the prominent importing countries.

HANDICRAFTS IN EXPORT TRADE

India's export trade in handicrafts has been on consistent uptrend. For the year 1972-73, the provisional export estimate was Rs. 1200 million, against Rs. 905 million in 1971-72. The foreign exchange earning of a single exporter in the line, M/s. Hansa Agencies, Basti Nau, Jullundur, recorded a lavel of Rs. 7 million in 1972-73, against Rs. 6 million in 1971-72.

During the current year, the Jullundur firm has already secured orders worth Rs. 4 million. The export success of the firm in recent years is significant against the background that its exports were limited to only about Rs. 0.06 million in 1960. They were awarded the National Award for outstanding export performance in handicrafts for 1969-70 and 1970-71 by the All India Handicrafts Board, operating under the aegis of the Commerce Ministry of the Government of India. For the year 1971-72, the firm has succeeded in securing the National Award from the Handicrafts Board for its creditable export performance during the year 1971-72. Lately, they have been recognised as an export house by the Government of India.

The range of products exported by the firm covers a large number of traditional handicrafts and handloom items, such as brass and copper artwares, woollen numdah and drugets, wooden artwares, artistic carving set swords, khukris, glass paper weights, agarbattis and chandan dhoop, leather sandals, silk scarves, readymade garments, white metal and semi precious stones, jewellery, handloom cotton bed spreads, cotton and woollen durry, rugs, glass beads, imitation jewellery and iron wares. Additionally, the firm has introduced new items in the export stream, such as Dhokra from West Bengal, Phad paintings, wooden folk arts, batik painting and artistic lac wares from Rajasthan, reed furniture from U.P., glass decorative items, lacquer dowry boxes, paper-machie artware from Kashmir palm lead basketsware from Tamil Nadu and Madhubani paintings from Bihar.

The exports of the firm are directed mainly to U.S.A., Australia, Canada, U.K., Netherlands, Japan, Hong Kong, Italy and France.

ELECTRIC MOTORS TO U.K.

India has recently bagged an order for supply of 9,000 fractional horse power motors valued at over Rs. 1 million to U.K. M/s. Crompion Greaves Ltd. 1, Forbes Street, Fort, Bombay, who have secured the order have already despatched the first consignment. This is reported to be the first ever order from U.K. for Indian fractional horse power motors.

Besides electric motors, the Bombay firm is engaged in the manufacture of installation and servicing of industrial motors, control gear, power and distribution transformers of other electrical and allied equipment. (Details of other contracts recently finalised by the firm have already appeared in Issue No. 32 (Vol. III) of this weekly).

The total exports of electric motors during 1971-72 were of the order of Rs. 10 million. In the first three quarters of 1972-73 (April December 1972), the exports added up to Rs. 6.15 million. Federal Republic of Germany, U.S.S.R., Arab Republic of Egypt, Malaysia, U.K., Kenya, Muscat, New Zealand and Sudan were the leading destinations during the period.

Against an installed capacity of 3.1 million H.P., actual production of electric motors of 33 units in the line was of the order of 2 million H.P. in 1971-72.

EXPORT PERFORMANCE AND POTENTIAL

RECORD EARNING FROM HANDICRAFT EXPORTS

A provisional estimate of India's export trade in handicrafts including gem and jewellery for the year 1972-73 has taken up the foreign exchange earning to the level of Rs. 1200 million as compared to Rs. 905 million in 1971-72.

The group of gem and jewellery alone registered a Rs. 90 million mark up in the export value at the level of Rs. 610 million as against Rs. 520 million in the comparable year. There was an encouraging improvement in respect of woollen based handicrafts also including carpets, rugs and namdahs. The woollen group is estimated to have secured nearly Rs. 202 million during 1972-73 while in the preceding year its export value was in the neighbourhood of Rs. 137 million.

Hardware constituted yet another line of export improvement and this group earned an estimated Rs. 93 million during 1972-73 as compared to Rs. 71 million in the year that preceded.

Owing to a sizeable increase in overseas demand, India-made cotton carpets and durries have also behaved well in the world markets during 1972-73 and earned an estimated Rs. 11.2 million. In the year 1971-72, this group fetched Rs. 8.2 million.

Sizeable increases were registered in respect of woodware, shawls, ivory products and embroidered goods also. Woodware, for instance, fetched Rs. 40 million as against Rs. 30 million in the comparable years. The export earning of shawls looked up to a level of Rs. 8 million as against Rs. 6 million. Export trade in ivory products recorded an earning of Rs. 1.5 million as against Rs. 1.3 million while that of embroidered goods was Rs. 12.5 million as compared to Rs. 10 million.

A slackness in world demand affected handprinted textile exports. These were supplied overseas to the tune of Rs. 30 million as compared to Rs. 45 million. Similarly, zari products witnessed a fall in their offtake at Rs. 6.4 million as compared to Rs. 9 million. The export earning of imitation jewellery, however, was maintained at Rs. 12.7 million.

In sum, the handicraft group has come to occupy a prominent position in the context of India's export growth and ranks only next to traditional export lines, such as jute manufactures, tea and cotton textiles.

EXPORT OF BICYCLES ON INCREASE

There has been an encouraging uptrend in India's export supply of bicycles. The number of complete cycles supplied abroad during 1972-73 was 211,580. It was of the order of 142,620 cycles in 1971-72. The foreign exchange earned was worth Rs. 25.8 million in 1972-73 as against Rs. 18.4 million in the preceding year.

The increase in exports of Indian bicycles is a reflection of the consistent improvement in their quality to suit the consumer preferences abroad. Aside from the West Asian and African markets, where the Indian bicycle has already established a strong foothold, it has also made a firm entry into the markets of U.S.A., U.K. and Canada and some of the West European countries.

If the total export picture of bicycles and parts is taken into view, the uptrend in Indian supplies would become more obvious. During 1972-73, these fetched Rs. 105.5 million as compared to Rs. 80.4 million in 1971-72, Rs. 69 million in 1970-71, Rs. 47 million in 1969-70 and R. 38.2 million in 1968-69.

The major exporters of bicycles from India are M/s. Atlas Cycle Industries, Sonepat, M/s. Avon Cycles Pvt. Ltd., Ludhiana, M/s. Hero Cycles Pvt. Ltd., Ludhiana, M/s. Hind Cycles Ltd., Bombay, M/s. Matchless Industries of India, M/s. Popular Cycle Manufacturing Co. Ltd., Agra, M/s. Roadmaster Industries of India Pvt. Ltd., Rajpura, M/s. Sen and Pandit Private Limited, Calcutta and M/s. T. I. Cycles of India Ltd., Madras.

During 1972-73, there was a boom in the demand for special model sports light Roadster bicycles fitted with 3-speed hubs in the U.K. markets. The orders secured from U.S.A. were in the neighbourhood of 240,000 racing models.

The prominent bicycle makes that are being exported from India include Hero, Avon, Atlas Raleigh, Hercules, Greyhound, Phillips, B.S.A., RMI, Matchless, Super and Marshall.

India's bicycle industry came up after the country attained independence in 1947 and since then rapid progress was witnessed both qualitatively as well as quantitatively. While in 1947, only 37,000 bicycles were manufactured, production increased to about 2.3 million numbers in 1972 in the large scale sector. The total installed capacity for the production of complete bicycles in the large scale sector alone would be more than 4 million numbers per year. In addition, there are estimated to be around 150 small scale bicycle manufacturers and assembling units and nearly 1000 small units producing bicycles components and accessories.

Besides the production of complete bicycles adequate capacity exists in India for the production of critical components like bicycle chains, freewheels, hubs, spokes and nipples, bicycle rims, mudguards, saddles and chain wheels. During 1971-72, Nigeria was the most important customer of bicycles, having imported 41,455 numbers at a value of Rs. 5.63 million. Iran was the next best market at about Rs. 4.2 million (3.8 million numbers). Indonesia was another important buyer at a value of Rs. 2 million. While U.S.A.'s imports in the year were of the order of Rs. 1.25 million. Zambia, Afghanistan, Malawi, Sudan and Kenya were among the other principal importers for the Indian bicycles.

Nigeria was again the major importer of bicycle parts during 1971-72, having imported worth Rs. 19 million. Indonesia, Iran, Malawi, Sri Lanka, Yugoslavia, Uganda, Thailand, Singapore, and Tanzania were the other leading buyers for bicycle parts made in India.

EXPORT TRADE IN ONIONS

India's export trade in onions amounted to nearly 55,000 tonnes valued at about Rs. 23 million during 1971-72. In the first three quarters of 1972-73 (April-December 1972), the exports were about 25,000 tonnes at a value of Rs. 14 million. A peak level in onions exports was achieved in 1970-71 when a quantity of nearly 155,000 tonnes was supplied overseas to fetch Rs. 62 million. The principal cause for the decrease in exports from that level was the stoppage of imports by Sri Lanka, effective from May 1971. Sri Lanka was by far the largest importer in the past, accounting for 60 per cent of the total exports. But Sri Lanka started organising domestic production of the item and its imports were as such banned.

Under the current policy followed by the Government of India, export trade in onions is allowed to all permissible destinations except Sri Lanka with floor price restrictions subject, however, to certain conditions including quality control and preshipment inspection before exports are effected.

Being a perishable commodity, onions cannot be shipped to distant destinations and the export is, therefore, restricted to only nearby destinations. Efforts are, however, being made to increase the exports to the neighbouring countries such as Persian Gulf countries, Malaysia and Singapore.

Maharashtra, Orissa, Andhra Pradesh, Mysore, Bihar and Madhya Pradesh are the major onions producing States in India. Domestic production is estimated at about 1 million to 1.2 million per annum.

As a measure of destinational diversification of onion exports from India, it has been decided to encourage the overseas supply of dehydrated onions for which there has been demand mainly in U. K., Netherlands and the Federal Republic of Germany. Two units, namely, M/s. Asian Dehydrates and M/s. Indo-Bulgar, started the production of dehydrated onions. The export effort of dehydrated onions fetched Rs. 2.4 million in 1970-71 and about Rs. 2.5 million in 1971-72. In the subsequent year, there was a slump in international price of dehydrated onions although damand position appears to have improved in recent months

During 1971-72, the major importer was Malaysia at a value of Rs. 9.5 million. The next best customer was Singapore at a value of Rs. 5.4 million. France, Kuwait, and Dubai also figured prominently in the list of importers.

SILK GOODS EXPORTS UP

The export value of Indian silk goods rose to Rs. 35.34 million during the first four months of 1973-74 (April-July 1973) as compared to Rs. 21.60 million in the corresponding period of 1972-73, registering a marked increase of 64 per cent.

Of the total exports during the period under review of 1973-74, the foreign exchange earning of mulberry silk goods was up at Rs. 29.50 million as against Rs. 17.87 million in the comparable period of the preceding year. The increase was noticeable in relation to all important destinations. Exports to U.K., for instance, improved to Rs. 2.64 million from Rs. 1.17 million, U.S.A. to Rs. 2.37 million from Rs. 1.29 million and German Democratic Republic to about Rs. 6 million from Rs. 4.74 million. The intake of other major importing countries during the comparable periods of the two years was : Malaysia Rs. 5.21 million and Rs. 1.68 million; France Rs. 3.12 million and Rs. 2 million; Japan Rs. 2.33 million and Rs. 0.95 million; Kenya Rs. 1.45 million and Rs. 0.36 million; Italy Rs. 1.20 million and Rs. 0.61 million; Sweden Rs. 0.60 million and Rs. 0.50 million; Switzerland Rs. 0.50 million and Rs. 0.36 million; Denmark Rs. 0.24 million and Rs. 0.15 million and Belgium Rs. 0.23 million and Rs. 0.13 million. The export value of supplies to other countries was Rs. 5.50 million against Rs. 3.33 million.

Varietywise, the highest increase in respect of mulberry goods was registered by dress materials. Their exports rose to Rs. 11.85 million from Rs. 6.40 million. Sarees with an earning of Rs. 6.51 million against Rs. 2.87 million constituted the next best category of export improvement. Export value of scarves improved to Rs. 6.20 million from Rs. 5.76 million. Similarly, ready-made garments recorded a sizeable improvement at about Rs. 3.80 million as against Rs. 1.98 million. Ties, however, fetched less at Rs. 0.58 million as compared to Rs. 0.65 million in the comparable period of 1972-73. The export earning of other items was Rs. 0.46 million and Rs. 0.19 million during the two comparable periods.

The exports of tasar silk goods at Rs. 5.92 million (April-July, '73) showed an increase of Rs. 2.20 million over Rs. 3.72 million in the comparable period of 1972. This progress in export value was attributable mainly to the increased off-take of Federal Republic of Germany at Rs. 3.12 million as against Rs. 1.76 million. U.S.A., France, Japan, and Switzerland were among the other important destinations which contributed to the improvement.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

FOREIGN EXCHANGE REGULATION ACT AMENDED

India's Foreign Exchange Regulation Act (1947) has been recently amended to curb the outgo of foreign exchange. Under the amendment, branches of foreign companies presently engaged in purely trading activities would have to convert into Indian companies. In the case of foreign companies engaged in manufacturing operations, the policy would be to ensure that foreign capital participation except in case of those engaged in priority sectors of export oriented industries is reduced to 40 per cent over a period of time. Further the amendment provided that foreigners and foreign companies would not be allowed to enter real estate business in India. To enable Government to curb malpractices by importers and exporters in invoice manipulation, the amendment would enable the Government to issue directives to the exporters not to sell goods exported on consignment basis without obtaining prior permission of the Reserve Bank of India at a price which would be lower than the value declared in the prescribed form in respect of commodities to be notified in this behalf. The amendment also empowers the Government to prohibit the export on consignment basis of any goods or class of goods or by any class of exporters, or to any particular destination wherever the Government would opine that the full export value would not be brought to India.

The Foreign Exchange Regulation Act which regulates the receipt and outgo of foreign exchange, securities and the import and export of currency and bullion was enacted in 1947. The Act provided for restrictions on dealing in foreign exchange, on import and export of certain currency and bullion and regulation of payment for goods exported.

On the basis of a recommendation made by the Public Accounts Committee in 1968-69, a Study Team was appointed by the Government to examine the question of leakage of foreign exchange through invoice manipulation.

There have been repeated complaints of malpractices by importers and exporters with a view to leaking foreign exchange abroad and building reserves in foreign currency. It is suspected that in the case of exports, goods are under-invoiced and in the case of imports they are over-invoiced. To curb these malpractices, it is now decided that whenever an importer makes a remittance for importing goods into India but does not import the goods or does not import goods of a value representing the foreign exchange remitted for such goods, within a reasonable time, or imports goods of a kind, quality or quantity different from that specified by him, he would be deemed, unless the contrary is proved, to have used the foreign exchange released to him for a purpose other than for which it was released. As regards exports, there are two aspects, namely, the realisation of full export proceeds and prompt realisation of such goods. The amendment to overcome these malpractices empowers the Government to issue directives to the exporters not to sell goods exported on the consignment basis without obtaining prior permission of the Reserve Bank at a price which is lower than the value declared in the prescribed form.

UNTIED WEST GERMAN AID

An agreement providing aid of DM 310 million (approximately Rs. 958 million at the current rate of exchange) from the Federal Republic of Germany to India for 1973-74 was signed recently.

The aid, which represents an increase of 10.7 per cent over the last year's assistance of DM 280 million, is completely untied and enables India to procure goods and services from any part of the world to her best advantage. The total assistance of DM 310 million includes debt relief of DM 140 million. The balance of DM 170 million will comprise of DM 80 million assistance for import of commodities and services; DM 20 million for imports approved by Indian Inter-Ministerial Committee for capital goods; DM 50 million for projects to be mutually selected and DM 20 million for granting loans to small and medium undertakings by the Industrial Finance Corporation, Industrial Credit and Investment Corporation of India and the National Small Industries Corporation.

Of the total aid, DM 190 million will be repayable in 30 years, including a grace period of 10 years, carrying a rate of interest of 2 per cent per annum.

The debt rescheduling loan of DM 98 million is repayable in 20 years including a grace period of seven years and carries interest at 3 per cent per annum. The amount of DM 22 million towards reduction of interest payments falling due between April 1, 1973 and March 31, 1974, will be extended as a grant.

The Federal Republic of Germany, which is a member of the Aid India Consortium, had pledged assistance totalling DM 310 million for the year 1973-74 at the Consortium meeting in June 1973.

India has been pressing in common with other developing countries, for untying of aid for a long time. The decision of the Federal Republic of Germany to wholly untie their aid is thus, an important and welcome development in the economic relations between developed and developing countries.

The assistance of the Federal Republic of Germany is utilised by India for import of raw materials, components and other maintenance requirements for the economy and capital equipment for various industries like automobiles, chemicals, engineering, power and steel. Among the important projects now being implemented with the assistance are the Gujarat Aromatics Project, the Mico-Bosch expansion scheme, the Bihar Alloy Steels Project, Modi Rubber Tyres and Tubes project and the Travancore Cochin Chemicals Caustic Soda plant.

Projects now under consideration, for future assistance from Germany include the Gujarat Industrial Investment Corporation's caustic soda project, M/s. Ramon and Demm's Industrial Gear Project, the expansion project of TELCO, the foundry forge project of the Mysore Iron and Steel Ltd. etc. The possibilities of West German assistance for establishment of a new fertilizer project will also be considered.

Further discussions on Indo-German technical cooperation covering both, the on-going projects and possible new areas for such cooperation in increasingly sophisticated fields of science and technology were also held. During the negotiations, an agreement was signed for a Commercial Development Programme, to promote exports from India.

PROGRESS OF HINDUSTAN ANTIBIOTICS

M/s. Hindustan Antibiotics Limited, Pimpri, Poona, the public sector undertaking engaged in the production of drugs and pharmaceuticals produced a number of drugs and medicines during 1971-72. The production range includes Penicillin products, streptomycin, Hamycin, packed vials, penicillin V tablets, Tetracycline Hydrochloride Capsules, Hamycin tablets and Hamycin Suspension.

As compared to the production during 1970-71, the items which registered increase in the following year include Pencillin V First Crystals, Bulk Penicillin G, Bulk Pencillin V, Streptomycin, packed vials, Penicillin V tablets and Hamycin Suspension. Penicillin G First Crystals, Hamycin, Tetracycline Hydrochloride Capsules and Hamycin Tablets were the specific items, the production of which registered decrease during 1971-72 as compared to the preceding year.

The actual production of the items was: Penicillin G First Crystals 67.22 mmu (1971-72) as against 70.74 mmu (1970-71); Penicillin V First Crystals 14.33 mmu as against 12.05 mmu; Bulk Penicillin G 56.35 mmu as against 50.70 mmu; Bulk Penicillin V 9.97 mmu as against 7.53 mmu; Streptomycin 61474 kg/base as against 60971 kg/base; Hamycin 13 chargeable kgs. as against 17 chargeable kgs; Packed vials over 52 million numbers as against 48.08 million numbers; Penicillin V Tablets 14025 million number as against 13.61 million numbers; Tetracycline Hydrochloride Capsules 3.57 million numbers as against 4.25 million numbers, Hamycin Tablets 451,000 numbers as against 461,000 numbers and Hamycin Suspension 32,692 bottles of 10 ml. each as against 22,822 numbers (of 10 ml. each). Even though the production of Penicillin G First Crystals was lower in 1971-72 than in 1970-71, the comparatively higher level of production of bulk penicillin was achieved by the use of purchased Penicillin G First Crystals. The production in the field of streptomycin was slightly higher in 1971-72 than that of the preceding year.

The Poona firm adheres to strict quality control measures in the production process so as to ensure highest standards to the users. During 1971-72, 1,160 samples of sterile/non sterile bulk products, 3,281 samples of sub-divided batches as also 2,358 samples of raw materials were tested and supplied to other units in the line. Besides, the firm also supplied laboratory animals to other laboratories in the country.

In the area of Research, the organisation has done a commendable job. It developed a high yielding new penicillin strain which was brought into use since

January 1972, besides conducting research on both, the existing as well as new items. The research yielded some technological advances in the case of Penicillin conversion. This is expected to boost the production in the penicillin sector. Further, an improved Enzyme has also been developed for commercial exploitation. The firm has to its credit the introduction of Aureofungin Sol, a new formulation of Aureofungin in the market during the year. Its product—Anti-amoebin capsules—has been accepted for dewarming of dogs in the Army. It also holds promise as a feed additive in small dosages to increase lactogenic properties.

The firm's expansion plans include setting up of a Vitamin C project, the cost of which has been estimated at Rs. 16.5 million. It entered into a collaboration agreement with an American firm for the manufacture of Semi-synthetic Penicillins including Ampicillin. This collaboration project is estimated to cost Rs. 6.25 million. In addition to this, a project for the manufacture of Neomycin Sulphate at a rate of 2000 kgs. per annum has been commissioned. The firm has received a letter of intent to double its capacity of streptomycin to 160 tonnes per annum. The project for expansion in the capacity is estimated to cost about Rs. 37.3 million. Another letter of intent for the manufacture of Erythromycin at the rate of 6 tonnes per annum has also been received by the firm during the year. Taking into consideration the growing demand for larger vialling, a new project, estimated at Rs. 7.15 million for increasing the vialling capacity to 84 million per annum has also been decided to be set up. The firm has further plans to diversify its manufacturing activities to take up the production of Industrial and Food Grade Enzymes considering the growing demand for these items.

CARGO LINER LAUNCHED

A 13,900 tonne cargo Liner M. V. "Vishva Madhuri" was recently launched at the Hindustan Shipyard, Visakhapatnam.

M. V. "Vishva Vardhan" is the fifth of the new series of ships being constructed with the machinery three quarter aft. and entirely designed in the Hindustan Shipyard. A sixty-ton derrick on the foremast is fitted for lifting heavy cargo. This vessel has been built conforming to the highest classification of the Lloyd's Register of Shipping. A single acting, two stroke, direct reversible, cross-head type turbo charged Diesel Engine 6 RND 76 type manufactured in Poland will be fitted on this vessel which will give a single speed of 17.65 knots at 10,500 BHP at 122 R. P. M.

This is the sixty-fourth ship to be launched from the shipways of Hindustan Shipyard. The Shipyard has so far constructed and delivered 60 ships of different sizes aggregating about 5,10,000 tonnes deadweight. It has been built for the Shipping Corporation of India which has a fleet of 95 ships of 12,00,000 GRT in addition to 44 ships of 16,20,000 GRT on order. By 1976, the Corporation is expected to own 140 ships of 28,00,000 GRT.

NAPHTHA STEAM CRACKING PLANT

As a part of the petro-chemicals complex in Gujarat State, the Indian Petrochemicals Corporation Limited are sponsoring the setting up of a naphtha steam cracking plant. The plant is expected to produce 450,000 tonnes of naphtha a year which would be used for the manufacture of intermediate chemicals and synthetic products. This plant is to contribute to the overall industrial development in Indian economy by facilitating a wider availability of naphtha which is being imported in substantial quantities.

An agreement was signed for the receipt of Rs. 78 million worth of loan from the U. K. for the construction of Naphtha Cracking Plant at Koyali (Gujarat).

NEW STRIDES IN ELECTRONICS

India, although a late entrant in the field of electronics, has emerged as a manufacturer of the most sophisticated items in the line and joined the select group of those few nations which are in forefront in this ine of manufacture. Among the Indian electronic equipment manufacturing establishments, M/s. Electronic Corporation of India Limited (ECIL) have a record of ntroducing new sophisticated products every year. The irm, in addition to its comprehensive range of electronic items, introduced some new products during 1972-73.

The new items include Solid State Annunciators, Solid State Industrial Time Delay Relays and Intrinsically Safe Relays. On the systems side, a number of new products were introduced during the year under review. Its Servo Control Division has to its credit the development of 2 Axis Gyro Assemblies for M/s. Bharat Electronics Limited (BEL), Bangalore. These are expected to be taken up for production on commercial scale during 1972-73. In the area of components manufactured, the Corporation has been successful in introducing the two new items—Nickel Cadmium Cells and Synchros. Aside these, the firm has on hand development work on several other instruments and components which are expected to be introduced during 1973-74.

ECIL's endeavours in the development of a number of electronic items, particularly those which were being imported from abroad hitherto have yielded fruitful results. The Corporation has been able to save for the country foreign exchange amounting to Rs. 80 million during the short span of only five years of its operations. Its consistent efforts towards progressive diversification in the product range every year is a clear proof of the competence and expertise developed by it in this line of manufacture.

In the preceding year, the Corporation introduced digital computers, TDC 12, the 50 MH fully transistorised modular plug in oscilloscope, the 400 channel analyser, the CCTV system, the ultrasonic flaw detector and some medical instruments. During 1970-71, the new items introduced by it included scintiscanner and ronograph, highly sophisticated medical instruments produced for the first time in the country, amplifiers and pulse generator, wire bound resistors, rectilinears and circular trimpots, epoxy transfer moulded rectifiers, boron coated detectors, analog and digital computers of entirely indigenous design and small AC gear Motor.

The Corporation's production during 1972-73 was estimated at Rs. 65.70 million while sales amounted to Rs. 57.7 million.

India's electronic industry turns out electronics based items including the sophisticated ones to the tune of Rs. 1200 million per annum. About 60 medium and large scale units and 1600 small scale units are operating in this sector and their annual export performance is of the order of Rs 60 million.

TUBE RAILWAY PROJECT COMMENCED

The construction work on India's first tube railway was started in Calcutta in August this year. The project is expected to be completed by 1978 and during the first quarter of 1979 the tube trains will be put into operation.

The route of the tube railway trains will be from Dum Dum to Tollygung and will cover 16.43 kilometers with stoppages in between. The proposed railway is expected to help to solve the intricate problem of transport of the metropolitan city to a large extent by carrying millions of passengers, both commuters and residents.

The scheme of the tube railway was prepared by the Metropolitan Transport Project (MTD) for Calcutta. The Project was set up under the Ministry of Railways in 1969 with Soviet technical assistance. Earlier, the circular railway system was proposed to be adopted. However, the idea was abandoned to switch over to the Railway Tube System (RTS). The tube railway line from Dum Dum to Tollygung is called the North-South Tube (N.S.T.). The NST will be double-track, enabling initially the running of 311 trains and 429 trains by 1990. The carrying capacity of each train has been estimated at 2460 passengers, Thus, by 1990, the number of passengers to be carried every day is estimated over a million persons. The distance between Dum Dum and Tollygung is to be covered in 30 minutes and from Dum Dum to Esplanade in 13 minutes only. The frequency, during the peak hours in the early years would be 150 seconds on average while in the later years, it has been assessed at 120 seconds.

MANUFACTURE OF STATIC RELAYS AND AIR CIRCUIT BREAKERS

India has achieved a major breakthrough in the manufacture of protective and auxiliary relays in recent years. M/s. English Electric Company of India Limited, Madras, one of the units in the line have to their credit the manufacture of indigenous protective gears for power systems. The firm is now capable of supplying a number of static relays to users at home and abroad.

The relays manufactured by the firm are subjected to strict quality control measures. Quality checks are carried out on every component to ensure its reliability in regard to humidity, frost and high ambient temperature.

The other highlights of the static relays are (i) automatic protection against over voltage and reverse polarity with every driving module; (ii) extensive protection against spikes from the power supply and under system fault condition; (iii) draw out facility of all modules with the supply on Polarising keyways in all boards/modules to ensure that damage cannot occur due to plugging in the incorrect board or plugging upside down; and (iv) provision of heat sink for those transistors and other solid state devices which are continuously loaded to ensure longer life.

The range of static relays of the Madras firm includes Static Timer type VTT both, delay on pick up and delay on drop-ff; Static Underfrequency Relay type ETG; CT Buswire Supervision Relay type VTX; Definite Time Overcurrent relay type CTU and Static Facia Annunciation Scheme. In addition to the above, the firm has on hand a phased programme to manufacture a comprehensive range of static relays at their Madras Plant.

Besides static relays, the firm has also developed and manufactured M-PACT air circuit breakers which represent the latest development in medium voltage service. These have been mainly supplied to various industries, public sector undertakings and electricity Boards. The production of these circuit breakers has been commenced in India in 1967. These are now available for loose sale for switchboard builders in a sub-cubicle construction.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

BROMELAIN FROM PINEAPPLE WASTE

The Regional Research Laboratory (RRL), Jorhat, has recently developed a process for the manufacture of bromelain which has extensive application in pharmaceutical industry, meat tenderization, chill proofing of beverages, protein hydrolysate preparation and baking industry as digestive aid.

Bromelain is a potent proteolytic enzymew hich acts on many protein substrates. It hydrolyses several times its weight of protein to peptides and amino acids.

At present, the enzyme is not manufactured indigenously and the requirements are met by imports. In view of its large application, it is expected to have good market in the country.

In the process developed by RRL, fresh pineapple waste containing 10 to 30 per cent fruit flesh is treated with sodium or potassium salt and the clear extract is collected by centrifuging or filtration. Bromelain contained in this extract is recovered by suitable solvents under certain optimum temperature conditions. The product so developed is slightly hygroscopic.

The main items of raw materials required in the manufacture of bromelain are fresh pineapple waste containing 10 to 30 per cent fruit flesh from canning industry, chemicals and solvents. All are indigenously available. The mojor items of equipment required are centrifuge, mixer (M.S. lined with SS), refrigeration unit, plate heat exchanger, rectification column with condenser (MS), boiler, vacuum oven with vacuum pump and storage vessels.

BLOWING AND FOAMING AGENT FOR RUBBER INDUSTRIES

The Regional Research Laboratory (RRL), Jorhat, has developed a process for preparation of dinitroso-pentamethylene tetramine (D.P.T.) which is a blowing and foaming agent commonly used in rubber industries.

D.P.T. is a creamish coloured amorphous powder nsoluble in water, slightly soluble in alcohol and easily ecomposed by mineral acids. The compound when ncorporated with the rubber mix and heated releases itrogen and vulcanisation takes place to yield foamed ubber.

Exact figures of demand for D.P.T. are not vailable but it is expected that not less than 60-100 onnes of this compound will be required per annum by the rubber industry. At present, substitutes for D.P.T, are being mainly used by the industry. However, large quantities are also being imported.

In the process developed by RRL., D.P.T. is prepared by reacting a few chemicals under certain temperature and pressure condititons and the yield is likely to be 55-60 per cent of the weight of raw materials.

The process has been developed on a laboratory scale of one kg. batch and samples can be made available to the entrepreneurs. The product has been found satisfactory to conform to ISI specifications. It has also been well received by the consumers.

Ammonia and some ammonium salts, which are indigenously available, are the main items of raw materials required in the process. The major items of equipment required are S.S. mixer, aluminium tank and aluminium filter unit. All these can be easily fabricated indigenously.

PHENYLBUTAZONE

As an effort toward import substitution, Regional Research Laboratory (RRL), Jorhat, has developed the process for the manufacture of phenylbutazone/butazolidine which is widely used as anti-orthrytic drug and has anti-inflammatory effect. It is also used as a medicine for gout and rheumatic fever.

The present demand of the drug is about 75 tons per year. It is likely to increase to more than 100 tons in the near future.

The process developed by RRL consists of the preparation of n-butyl bromide from n-butylalcohol, which is then condensed with diethyl malonate to give diethyl-n-butyl malonate. Side by side nitrobenzene is reduced to hydro-zobenzene which is further condensed with diethyl n-butyl malonate to give phenylbutazone.

The main raw materials required in the process of the drug are hydrogen bromide, sulphuric acid, n-butyl alcohol, sodium, diethyl malonate, hydrochloric acid, benzene, nitrobenzene, rectified spirit, sodium hydroxide and hydrogen. All these are available indigenously.

The major items of equipment required are jacketed reaction vessels, condensers, fractionating column, solvent storage vessels, pumps, crystallisers, filters and driers, piping and electrical installation. These can also be manufactured indigenously.

EXPORT TRADE WITH LIBYA

In the context of export trade to Libya, India ranks seventh among the Asian and African countries, excepting Japan. Her export trade to Libya has witnessed a gradual improvement over the last few years. The exports which amounted to Rs. 12.48 million in 1969-70 increased to Rs. 16.50 million in 1970-71 and Rs. 18.35 million in the following year. During the first three quarters of 1972-73 (April '72—December '72), these exports were valued at Rs. 20 million as compared to Rs. 12 million during the same period of the previous year. Imports from India, however, account for only 0.4 per cent of Libya's total imports.

Alongside the improvement in export value, the composition of supplies from India to Libya has witnessed diversification. Among a total of about 900 items, big and small, imported by Libya, India's contribution till recently was limited to only 50 items. The number of items now supplied has risen to 115. The items supplied include Iron and Steel products, domestic stoves, boilers, cookers, base metal stoppers, crown corks, bottle caps, nitrogenous fertilizers, footwear, agricultural machinery, road tractors, motor vehicles and parts, pumps for liquids, outer garments for men and boys, woven jute fabrics, saffron, flowers, spun yarn, insulated wires and cables, preserv-

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ed fruits, cinnamon pepper and pimiento, chemical products, household wood utensils, fabrics, copper bars, aluminium plates, base metal fittings and mountings for furnitue, copper articles, internal combustion engines other than for aircraft, machinery for milling grains, sewing machines, electrical apparatus, base metal lamps, natural gums, resins, balsam and lacs, plants and parts of plants for dyeing, tool handles decorative articles, iron and steel nuts, bolts, screws, pliers, pincers, spanners, cultery, iron and steel domestic utensils, ornaments of base matals, spraying machinery, electro mechanical hand tools, electrical parts, illuminating and signalling glassware, hand bags, artificial plastic material, precious metal wares of goldsmiths, imitation jewellery. smoking pipes, fountain pens, plans and drawings for industrial and commercial purposes, motor vehicles, tea, jute bales, jute bags, brocades, steel safes, typewriters, wooden poles, petrol pumps, coffee (green roasted), pharmaceuticals, bicycle parts, and electric fans.

In addition, India has a potential market in Libya for a number of other items such as butter, fish and fish products, jams, honey, sugar, oil seeds, various wood products, non-ferrous metal scrap, lubricants, coconut oil, organic and inorganic chemicals, varnishes, medicaments, toilet and laundary soaps, plastic materials, starches, insecticides, tyres for vehicles and cycles, rubber conveyors, plywood products, builders woodwork, machine made paper, exercise books, stationery, jute yarn, coated textiles, carpets, cement, bricks, abrasive cloths, glass, porcelain forgings, copper plates, aluminum bars, plates, tubes, pipe fittings, agricultural hand tools, razor blades, locks, base metal fittings for furniture, steam generating boilers, machines for calculating statistics, iron and steel anchors, needles, springs, base metal clasps, name plates, soldering rods, gas generators, air conditioners, lifting and loading machines, motorized hand tools, machine tools, spraying machinery, weighing machines. machine tools, parts, switch gears, electrical insulators, transformers, HT & LT insulators, radio receivers, domestic refrigerators, electric lamps and acc [illegible] condensers, lorries and trucks, motor cycl [illegible] and other vehicles, cycles, aircraft parts, medical furniture, travel goods, hand bags, leather apparel, knitwear, medical instruments, surveying instruments, mechanical appliances, technical models for demonstration, watches, clocks, music records and sports requisites.

India's economic partnership with Libya also covers turnkey projects, consultancy services and joint ventures. Of the two turnkey projects undertaken by India, one relates to the manufacture and erection of transmission line towers for a distance of 300 kilometres in Tripolitania area by M/s. Kamani Engineering Corporation, Kamani Chambers, Nicol Road, Bombay-1. The other project has been undertaken by M/s. Star Trading Company Private Limited, Dhanraj Mahal, Shivaji Marg, Bombay-1, for construction, equipment and operation of a textile mill complex in Zunzur. Consultancy services offered by India include feasibility report on a major steel plant in Libya by the Indian Consultancy firm of Dasturs. Yet another feasibility report pertaining to a mini steel plant from scrap metal has been prepared by the National Industrial Development Corporation (NIDC), a consultancy organisation of the Government of India. India's Joint Venture in Libya relates to the manufacture of pipes in Bengazi for various requirements like water supply, drainage and sewage.

India's export trade to Libya is expected to improve further as a monthly sailing service between the two countries has been introduced recently under the aegis of the Shipping Corporation of India. The monthly sailings are expected to reduce the period of transit between Indian and Libyan ports to about a month as against three months at present. This is to facilitate the delivery schedule for Indian exports to Libya and to make these more competitive in price on account of less cost on freight and insurance. ☐

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INDIAN PIGMENTS TO WORLD MARKETS

India's paints and varnishes industry has come to substantially contribute to the overall export earnings. It secured nearly Rs. 29 million worth of foreign exchange during 1971-72 and even in the nine months of 1972-73, the exports improved to the level of about Rs. 36 million. A wide variety of pigments and varnishes are active on the export stream, such as chrome pigments, ultra-marine blue, printing inks, prepared organic dye-stuff pigments, inorganic pigments, ready mixed paints, synthetic enamels, varnishes and artists' colours. U. S. S. R., Nepal, Bangladesh, Thailand, Argentina, U.S.A. and Ghana were the leading markets during 1972-73.

The success story of M/s. Sudarshan Chemical Industries Private Limited, 162, Wellesley Road, Sangam Bridge, Poona, deserves mention in the context of pigment exports. So far, their products have been exported to 35 countries including Australia, Belgium, Cambodia, Canada, Denmark, Finland, France, German Federal Republic, Greece, Hong Kong, Indonesia, Iraq, Italy, Japan, Korea, Kuwait, Malaysia, Malta, New Zealand, Philippines, Saudi Arabia, Singapore, South America, Sri Lanka, Sweden, Taiwan, Thailand, Arab Republic of Egypt, U. K., U.S.A., U.S.S.R., Vietnam and Zambia.

Initially set up to manufacture chrome yellow pigments, the firm has diversified its production range to include a number of organic, inorganic pigments and intermediates, such as benzidine yellows, toluidine reds, rubine toners, red lake C, maroon, pink, cerise and violet toners, deep chrome greens, phthalocyanine blues and greens, lemon, middle, orange, scarlet and zinc chromes, prussian blue and middle, light, brilliant and deep chrome greens as well as C acid.

The firm claims to have developed the know-how for the manufacture of pigments intermediates, cosmetic colours, flushed and micronised pigments for the first time in India. For the development of products and processes based on indigenous know-how, the firm received Sir P. C. Ray award for the year 1967. They have also received Certificate of Merit for their export success from the Chemicals and Allied Products Export Promotion Council, Calcutta.

Their exports for the years 1971-72 and 1972-73 were of the order of Rs. 2.43 million and Rs. 3.53 million, respectively

The firm is presently manufacturing organic and inorganic pigments and intermediates that constitute raw materials for paints, printing ink, plastic and rubber industries.

An interesting feature of M/s. Sudarshan's export endeavour refers to the grant of 'Priority Status' received from the Government of India, as an exporter of more than 10 per cent of the value of their production.

LEATHER AND LEATHER MANUFACTURES FETCH MORE FOREIGN EXCHANGE

The mounting export turnover of India's leather industry has pushed up the overall export earning of the country year to year. Among a sizeable number of leather manufacturing firms scattered all over the country, M/s. T. Abdul Wahid and Company, 19, Vepery High Road, Periamet, Madras has a record of securing foreign exchange in growing volume every year. During 1972-73, the firm earned over Rs. 90 million as against Rs. 42 million in the preceding year, registering a sharp rise of more than 100 per cent. Quantumwise, 4.70 million pieces of leather of different varieties were supplied to overseas markets as against 3.80 million pieces during the preceding year.

Varietywise, wet blue chrome goat skin constituted the major export item of the firm during 1972-73. It fetched the bulk of export earning at a value of over Rs. 67.72 million. In terms of quantity, more than 3.57 million pieces were supplied abroad. U.S.S.R. was the biggest buyer which alone imported the bulk at a cost of over Rs. 57 million (2.92 million pieces). German Democratic Republic, Italy, Federal Republic of Germany, France, Japan, Belgium, Spain and U.S.A. were the other markets. E. I. tanned goat skins was the next best variety of export of the firm which secured Rs. 16.36 million (0.84 million pieces). Federal Republic of Germany, Italy, Spain and Japan were the significant customers. Finished leather is another line of the firm's export trade. This variety earned Rs. 5.80 million (0.26 million pieces). U.S.A. was the largest importer of this variety having purchased worth Rs. 5 million (0.23 million pieces). U.K. and Canada were among the other markets. Apart from these principal varieties, chrome crust and hair-on-carpets and F.L.P. are also supplied by the firm to overseas markets.

During the first quarter of 1973-74 (April-June 1973), the exports of the firm amounted to as much as Rs. 53.77 million, which outstripped the entire export earning of the firm during 1971-72. Over 2.20 million pieces were supplied abroad during the period. U.S.S.R. again topped the list of buyers having imported worth Rs. 46.25 million (1.91 million pieces), followed by U.S.A. at Rs. 3.60 million and Italy at

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over Rs. 1 million. Federal Republic of Germany, Japan, Spain, France and German Democratic Republic were the other significant markets. Varietywise, the export composition was : blue wet chrome goat skins Rs. 47.82 million (nearly 2 million pieces); Finished leather Rs. 3.78 million (0.13 million pieces) and E. I. tanned goat skins Rs. 2.16 million. In addition to these varieties, the firm supplied abroad finished leather products also.

The Madras firm is one of the well established units in the line. Its range of products includes wet blue chrome goat skins (suitable for glaze kid and garment leather), wet blue chrome sheep (pure red hair-tannage similar to goat) in wet blue chrome goat and sheep skins sector. The installed capacity of this sector is of the order of 3.6 million pieces per annum.

In the field of finished leather, the production range covers full chrome upper leather, resin finished calf, suedes, hand grained Morocco, chamos leather, glaze kid, semi chrome glaze kid, goat and sheep natural gloving leather, fancy leather, shrunken grain calf and goat skins and lining leather. The installed capacity in this line of manufacture is 1.9 million pieces per annum. The installed capacity of 700,000 pieces per annum pertains to the area of E. I. tanned goat and sheep skins and range of products cover E.I. tanned goat and sheep skins of various tannages utilising skins of different origins.

The firm's production caters to the requirements of domestic industries as well as export markets. It also keeps itself abreast of the current trend in the International leather market. From the traditional products, the firm lately diversified its range to include finished leather of high quality, capable of satisfying the requirements of sophisticated consumers at home and abroad. The firm with the use of modern technology and equipment in its manufacture, is currently engaged in production and exports of leather shoes, handbags, leather upholstered furniture, handmade carpets, wooden and bronze handicrafts and a number of other leather products.

India's leather industry is one of the leading foreign exchange earning sectors of the economy. During 1971-72, the exports amounted to Rs. 907.66 million, registering a sizeable increase over the export value of the preceding year at Rs. 721.82 million. During the first three quarters of 1972-73 (April-December 1972), the exports were as much as Rs. 1148 million, registering an impressive rise over the export performance at Rs. 641.50 million during the corresponding period of the previous year.

BARBED WIRE TO AMERICAN MARKETS

A ship laden with 150 tonnes of barbed wire has recently left Calcutta port for Portland and Los Angeles in the United States of America and Vancouver in Canada, marking the first ever Indian export of the product to these countries. M/s. Chaliha Rolling Mills Private Limited, Calcutta was the Indian firm that has supplied the consignment on receipt of a trial order for 500 tonnes of wire from the overseas Associate of another Indian firm, M/s. Raunaq International Incorporated, Los Angeles, U.S.A. The value of the order is about Rs. 0.93 million ($ 128,000).

M/s. Raunaq International has also placed a token order for 2000 coils of barbless barbed wire (stranded wire as is known in India) valued at $ 12,000 with the Calcutta firm. This would be another first export consignment from India to the sophisticated U.S. market.

Used for fencing purposes, about 60 per cent of the 500 tonne order for barbed wire is meant for use in the United States and the rest in Canada.

The Calcutta firm is mainly engaged in the production of two product lines : its rolling mill producing special sections for making steel doors and windows and its wire mill producing intermediate products, such as hard bright wire, galvanized iron wire and end–products like barbed wire, stay wire and barbless barbed wire according to the American Reporter, New Delhi.

India's total export of wire products (excluding electric wires) and fencing grills was of the order of Rs. 24.50 million during 1971-72. During the first three quarters of 1972-73, the foreign exchange earning of these products was of the order of Rs. 16.55 million. Of this, wire cables and ropes alone fetched Rs. 12.96 million, while the share of iron or steel wire of fencing types and gauze netting grill fencing was of the order of Rs. 3.50 million. U.S.S.R., Yugoslavia, Kuwait, Malaysia, Iraq and Arab Republic of Egypt were among the major destinations for these products.

CABLES AND WIRES ON EXPORT FRONT

India's exports of cables and wires touched a new high during 1972-73 earning Rs. 126 million, according to the Engineering Export Promotion Council, Calcutta. During 1971-72, the exports were of the order of Rs. 112.5 million. Among India's engineering industries, this industry assumes importance, next only to the automobile industry.

Insulated cables and wires and power alumunium conductors are the major varieties for which there is growing demand overseas. U.S.S.R., Iran, Sri Lanka Qatar, Federal Republic of Germany, Arab Republic of Egypt, Sudan, Tanzania, Kuwait, Australia, Singapore, Hong Kong and Thailand are the significant buyers of these varieties.

M/s. Cables Corporation of India, 6, Ballard Road, Bombay, one of the units in the line improved its export performance from Rs. 11.60 million in 1971 to Rs. 13.70 million during 1972. The varieties of cables and wires exported by the firm broadly included PVC insulted and paper insulated cables, PVC insulated wires and screened signalling cables.

The firm's manufacturing range covers insulated cables and wires (paper and PVC). It is engaged in diversifying its output and hopes to step up its exports sizeably.

According to the Directorate General of Technical Development (DGTD), Ministry of Industrial Development, the production of cables and wires in the organised sector during 1972 was of the order of Rs. 1696 million as against Rs. 1434 million in the preceding year. The range of products of the wires and cables industry broadly covers insulated wires and cables, bare copper conductors, aluminium conductors, steel reinforced (ACSR and ACC conductors), VIR and PVC cables and power cables—PILC and PVC including special cables, such as mining, quarry and trailing cables, telephone cables and winding wires.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT TRADE WITH EAST EUROPE

ACCENT ON NON-TRADITIONAL PRODUCTS

India's trade with East European countries is conducted on a balanced basis in accordance with the Bilateral Trade and Payments Agreements concluded between them from time to time. The strategy of India's export trade to this region has been to diversify and achieve substantial growth rate. Keen efforts are being made by India to increase the share of non-traditional goods in her exports and to buy from East Europe the maximum quantities possible of industrial raw materials, fertilizers and non-ferrous metals.

India's exports to East European countries grew from about Rs. 79 million in 1953-54 to Rs. 3435 million in 1971-72. The share of these countries in India's exports has increased from 0.9 per cent in 1953-54 to a little over 21 per cent in 1971-72.

Initially, India's exports to East Europe principally comprised of traditional goods like tobacco, jute goods, oil cakes, cashew kernels, tea, coffee, spices and mica. Most of these items have found growing and new markets in East Europe and these markets have helped realise stable unit value for Indian supplies. It has, however, been India's endeavour to maintain the level of exports of traditional goods and push up the supplies of non-traditional products. With this in view, increasing provisions have been made in the trade plans with East European countries for India's export of non-traditional goods. The percentage of non-traditional goods provided for in the trade plan in 1970 was of the order of 25.5 per cent while the share of these goods in actual exports was nearly 20 per cent in the year. In 1971, the percentage of non-traditional goods actually exported was 22 while only 20 per cent was provided for in the trade plan for the year. In the 1972 trade plan, 31.5 per cent of total exports estimated to East Europe was provided for non-traditional goods and till August 1972, about 19 per cent was achieved.

It would be of interest to examine the picture of countrywise non-traditional product exports as percentage of actual exports in recent years. In respect of Bulgaria, for instance, total exports in 1970 were of the order of Rs. 72.3 million. The share of non-traditional goods was Rs. 17.11 million or 23.6 per cent. In 1971, actual exports to that country totalled Rs. 134 million of which non-traditional goods contributed Rs. 26 million (19.5 per cent). In the case of Czechoslovakia, total exports in 1970 were Rs. 268.35 million and the share of non-traditional goods was nearly 18 per cent at Rs. 48 million. In 1971, the exports to that country were Rs. 287 million of which non-traditional products accounted for nearly Rs. 58.7 million or 20.5 per cent. The German Democratic Republic absorbed Indian imports worth Rs. 224 million in 1970 of which India's non-traditional goods were of the order of Rs. 16.33 million (7.3 per cent). In 1971, GDR's imports totalled Rs. 214 million and the share of non-traditional goods rose substantially to nearly 19 per cent, at over Rs. 40 million. India exported worth Rs. 133 million to Hungary in 1970 and the purchase of non-traditional goods was 12.7 per cent at about Rs. 17 million. In 1971, Hungary imported worth Rs. 156 million and non-traditional manufactures were about 21 per cent at Rs. 33 million. Polish imports totalled Rs. 208 million in 1970 and India's non-traditional goods contributed 6 per cent at Rs. 12.6 million. In 1971, Polish imports were reduced to the level of Rs. 182 million but the share of non-traditional goods rose to about 8 per cent at Rs. 15 million. Rumania's imports from India in 1970 were worth Rs. 128 million but the share of non-traditional goods was a little less than 2 per cent in that year. But in the subsequent year, her purchases were at Rs. 118 million and the share of non-traditional products improved sizeably to 9 per cent. The most spectacular increase in exports to East Europe was, however, in respect of U.S.S.R. This country purchased from India goods worth Rs. 2036 million in 1970 of which over Rs. 490 million worth of India's non-traditional products contributed about 24 per cent of her total exports to the Soviet Union. In 1971, U.S.S.R's imports from India totalled Rs. 2120 million while India's non-traditional supplies accounted for Rs. 523 million or 24.6 per cent. Thus, an overall total of Indian exports to East Europe in 1970 was of the order of Rs. 3070 million and the share of non-traditional goods was Rs. 605 million or 19.7 per cent. This share improved to 21.9 per cent in 1971 with India's total exports to East Europe at Rs. 3210 million and the contribution of non-traditional products of an order of Rs. 706 million.

In respect of many manufactured and engineering commodities, the first ever regular export from India was made to East Europe. Among the important commodities that have been introduced in this market are railway wagons, tipper trucks and jeeps, wire ropes, transistor radios, textile machinery, knitting machines, surgical instruments, rayon cord, shoes and chappals, readymade garments, linoleum, thermos flasks, gramophone records, drugs and pharmaceuticals and chemical products.

The share of India's select non-traditional commodities to East Europe during 1970-71 was as follows ; 39.5 per cent for rubber manufactures; 40 per cent for dyeing and tanning materials; 37 per cent for plastic materials; 18 per cent for chemical materials; 21 per cent for processed foods; 41 per cent for foot-wear and 13 per cent for transport equipment.

In 1971, India's total exports to East Europe were of the order of Rs. 3480.96 million while India's imports were Rs. 2123.67 million, showing a favourable balance to India to the tune of Rs. 1357.29 million. In the year, Indian exports and imports respectively amounted to Rs. 133.87 million and Rs. 158.92 million in respect of Bulgaria, Rs. 286.84 million and Rs. 113.10 million in respect of Czechoslovakia, Rs. 213.78 million and Rs. 200.93 million in respect of German Democratic Republic, Rs. 155.79 million and Rs. 100 million in respect of Hungary, Rs. 181.80 million and Rs. 262.90 million in respect of Poland, Rs. 117.90 millian and Rs. 140.26 million in respect of Rumania, Rs. 2119.23 million and Rs. 885.81 million in respect of U.S.S.R. and Rs. 271.81 million and Rs. 61.75 million in respect of Yugoslavia.

ENGINEERING PRODUCTS TO SOUTH AMERICA

India's total exports to South America were of the order of Rs. 103:42 million in 1970-71 and Rs. 153.80 million during 1971-72. In the first three quarters of 1972-73, the exports were Rs. 51.80 million. Of these total exports, the share of engineering goods was Rs. 4.6 million in 1970-71, Rs. 9 million in 1971-72 and nearly Rs. 3.8 million in the first three quarters of 1972-73

(April-December, 1972). Total exports of engineering goods from India to all destinations stood at Rs. 1166 million in 1970-71, Rs. 1260 million in 1971-72 and an estimated Rs. 1502 million in 1972-73.

The major recipient of engineering products from India was Argentina in 1970-71 at Rs. 1.5 million, followed by Peru at Rs. 0.8 million, Jamaica Rs. 0.55 million, Guiana Rs. 0.37 million and Trinidad Rs. 0.33 million. In 1971-72, the major importer was Guiana at Rs. 2.6 million, followed by Jamaica at Rs. 0.55 million, Trinidad at Rs. 0.49 million and Peru at Rs. 0.46 million. In the first three quarters of 1972-73, Guiana, Trinidad, Peru, Bolivia, Brazil, Surinam and Venezuela were the major importers of engineering items from India.

Recently, a trade delegation sponsored by the Engineering Export Promotion Council, Calcutta, visited some of the South American countries. The delegation found substantial scope for development of trade and industrial relations, particularly with Jamaica and Trinidad as well as Peru and Colombia. Among the items which have substantial export scope from India are modernisation of textile mills, expansion and modernisation of sugar industries, expansion of cement industries, power generation and distribution equipment, particularly transmission line towers and aluminium conductors, sewarage and water supply equipment and equipment for refrigeration and air-conditioning.

The delegation also discovered opportunities for India's entering into joint industrial ventures in respect of consumer goods like bicycles, air-conditioning and refrigeration, house service maters and transmission line towers. Scope is also reported for cooperation with the developed industries in Brazil for undertaking construction work in third countries. There can also be a possibility for India to supply components for automobile and bicycle industries in Brazil and Argentina.

EXPORT PROSPECTS OF AUTOMOBILE ANCILLARIES

An export level of about Rs. 375 million per year is estimated to be reached by India's automobile ancillary industry within a period of three years, according to the Trade Development Authority, New Delhi.

Twelve specific ancillaries have been identified as having bright export potential. The estimated annual foreign demand for these ancillaries is as follow : Inlet and exhaust valves 5 million numbers; piston rings 25 million numbers; automotive castings 20,000 tonnes; automotive forgings (connecting rods, cranks shafts) 8,000 tonnes; fuel injection equipment and parts $ 8 million; electrical equipment $ 4 million; shock absorbers 1 million numbers; hydraulic jacks 100,000 numbers; radiators 100,000 numbers; automobile tool kits 3,000 tonnes; wiring harness $ 1 million and cold formed metal profiles and window channels $ 2 million.

The international trade in automobile ancillaries is currently stated to be running at Rs. 37,500 million of which industrialised countries in North America, Eastern Europe and Japan account for an import of Rs. 30,000 million. An important trend of this international trade is that the giant automobile companies of U.S.A., U.K., West Europe and Japan are increasingly resorting to sub-contracting and off-shore procurement particularly for labour intensive ancillaries because of their continuously rising domestic wage costs. Maxico, Brazil, Spain, Argentina, Yugoslavia, South Korea and Singapore are among the developing countries that have taken advantage of this process and expanded their exports to the developed world.

International sub-contracting prospects and participation in off-shore procurement are now offered to India also. Recently, the Trade Development Authority, New Delhi, for instance, received within a span of a year trade enquiries for export from India of an annual Rs. 200 million worth of selected ancillaries. Most of these enquiries are for the original equipment market and have come from Alfa Romeo and Fiat of Italy, Volkswagon and Opel of Federal Republic of Germany, Citroen of France, Leyland Motors and Chrystler Roots Group of U.K., as well as American Motors of U.S.A.

In addition to the original equipment markets abroad, the spare part requirements for servicing India's own exports of vehicles – let alone the spare part requirements of foreign vehicles – are continuously rising. About 8000 trucks, buses and jeeps of Indian origin are presently on foreign roads; the number would go up to some 20,000 within the next three years. This is how the spare part export potential from India add up to a sizeable bill.

While the Trade Development Authority has recently received substantial enquiries on a variety of automobile ancillaries, it is felt that specific ancillary items on which sustained export drive should concentrate are inlet and exhaust valves; piston assemblies and parts (pistons, piston rings and gudgeon pins); circlips; automotive forgings (e.g. crank shafts, connecting rods, gear shafts forgings); front engine mounting brackets and similar rubber bonded metal parts; cold formed metal profiles and window channels; hydraulic jacks; pedal pumps; air and fuel filters and elements; fuel injection equipment and parts; timing chains; tie rod ends; wiring harness; electrical equipment for automobiles (e. g. ignition coils, starter motors etc.); radiators; wind screen wipers and wiper arm blades and garage tools and accessories.

In addition to the export potential of auto ancillaries to West European, American and Japanese markets, there is a growing demand for these products in the Soviet Union for the manufacture of Fiat cars and commercial vehicles. A Delegation sponsored by the Projects and Equipment Corporation - a subsidiary of the State Trading Corporation of India, visited U.S.S.R. to explore the possibilities of automobile ancillary exports. According to the Delegation, some of the items in which U.S.S.R., showed interest to enter into long-term contracts are piston, piston rings, piston pins, shock absorbers, fuel injection equipment, spark plugs, electrical equipment, brakes, gaskets, clutches, clutch facings, hoses, oil seals and forgings.

Already samples of the some of the ancillary products have been supplied to the Soviet Union for testing purposes and the U.S.S.R. authorities have sent product specifications of their requirement. It is felt that U.S.S.R. would provide an important export outlet for Indian automobile ancillaries and it should be possible for India to meet a sizeable portion of the Russian demand.

PADLOCKS ON EXPORT STREAM

India's exports of padlocks, locks and keys secured foreign exchange at a value of Rs. 5.40 million in 1971-72. During the first three quarters of the following year (April-December 1972), the exports brought in Rs. 4.65 million.

During 1971-72, padlocks earned Rs. 1.31 million while during April-December 1972, their exports improved to Rs. 1.95 million. The marginal rise in exports during the period under review of 1972-73 was noticeable mainly because of the improved offtake at Rs. 1.22 million by German Democratic Republic as compared to Rs. 0.83 million in 1971-72 and emergence of Poland as a fresh buyer which bought worth Rs. 0.30 million.

The export of locks and keys which fetched Rs. 4.10 million in 1971-72, secured Rs. 2.71 million in the period under review of the following year. German Democratic Republic was the major buyer during 1971-72 having bought worth Rs. 1.29 million, Federal Republic of Germany, Yugoslavia, Czechoslovakia, Hungary, Saudi Arabia and U.K. were significant among other markets. During April-December 1972, Bulgaria, Yugoslavia, Hungary, Poland, Sudan, Federal Republic of Germany and German Democratic Republic were the significant markets.

SUGAR MILL MACHINERY TO INDONESIA

A vast export potential equivalent to $ 100 million is stated to await in Indonesia for the sugar mill machinery, according to an Indian Trade Delegation which recently visited that country. The World Bank has prepared a feasibility report on Sugar Industry in Indonesia and suggested for an investment of $ 100 million for the rehabilitation of sugar establishments in Java islands. Aside from this, the Asian Development Bank has assured to give aid for the rehabilitation of two sugar factories in East Java. The Indian Delegation offered to conduct feasibility studies and to produce technical assistance for the sugar producing units.

India's technical expertise in sugar mill machinery manufacture has reached a stage which can enable it to supply the full range of machinery and accessories in the line. It can undertake turnkey assignments at competitive prices.

The country is already exporting sugar mill machinery to a number of countries abroad. Among the prominent absorbing countries are Uganda, Kenya and Nigeria.

MICA EXPORTS BRIGHTEN

India enjoys reputation as a competent supplier of quality mica in world markets. During 1971-72, mica exports totalled Rs. 17.60 million while in the first three quarters of the following year (April-December 1972), the exports brought in Rs. 16.45 million. Quantumwise, 22,955 tonnes and 19,670 tonnes were supplied to overseas markets during the respective periods.

Processed mica is absorbed in bulk by the importing countries as compared to the other grades. During 1971-72, its share was of the order of 19,635 tonnes, valued at Rs. 15.25 million while in the first three quarters of 1972-73, it was 16,690 tonnes which earned foreign exchange at Rs. 14.15 million. Besides this Principal variety, the rest of the export earning was from mica products.

M/s. Minerals and Metals Trading Corporation, a public sector undertaking, recently concluded an export contract with the USSR for the supply of mica valued at Rs. 53 million. With this contract, MMTC's order book for this item indicates that the volume of exports would amount to Rs. 137 million. Additionally, negotiations for further contracts totalling about Rs. 40 million are in progress with certain markets abroad. On the basis of the orders booked so far and under negotiations, MMTC expects to scale a new peak at an estimated Rs. 180 million.

The exports of processed mica were canalised through the MMTC with effect from January 1972 with an objective to boost exports as well as to assist the small mine owners, processors and exporters to export in growing volume.

India's total production of mica in 1971-72 was estimated at 18,065 tonnes comprising 13,704 tonnes of crude mica variety and the rest of mica scrap.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

GUIDELINES ON INDIA'S INDUSTRIAL LICENSING POLICY

The Industrial Policy Resolution dated April 30, 1956 provides the basic framework of Government of India's industrial licensing policy. In the context of the approach to the Fifth Five-Year Plan, the policy has been reviewed and certain decisions were taken as announced by the Ministry of Industrial Development in February 1973.

The Industrial Policy Resolution of 1956 emphasised the importance of securing a continuous increase in production and its equitable distribution to the Indian economy and pointed out that the State must play a progressively active role in the development of industries. The Resolution also underlined the need for prevention of private monopolies and concentration of economic power, the role of cottage and village industries in the development of the national economy as also the need for balanced industrial progress.

The Resolution classified industries into three categories having regard to the role which the State would play in each of them : (i) industries the future development of which would be the exclusive responsibility of the State (such industries are listed in schedule 'A' to the Resolution and include arms and ammunitions and allied items of defence equipment, atomic energy, iron and steel, heavy castings and forgings of iron and steel, heavy plant and machinery for iron and steel, mining, machine tools and such other basic industries; heavy electrical plant including large hydraulic and steam turbines, coal and lignite, mineral oils, mining of iron ore, manganese ore, chrome ore, gypsum, sulphur, gold and diamond, mining and processing of copper, lead, zinc and tin, aircraft and air transport, railway transport, shipbuilding, telephones and electricity generation and distribution); (ii) industries which would be progressively state-owned and in which the State would generally take initiative in establishing new undertakings but in which private enterprise is also expected to supplement the effort of the State (these industries are listed in Schedule 'B' of the Resolution and include aluminium and other non-ferrous metals, machine tools, ferro alloys and tool steels, basic and intermediate products required by chemical industries, such as the manufacture of drugs, dye-stuffs and plastics, antibiotics and other essential drugs, fertilisers, synthetic rubber, carbonisation of coal, chemical pulp and road transport) and (iii) the remaining industries the future development of which would be generally left to the initiative and enterprise of the private sector.

The Indian Government's latest decision on industrial policy in the context of approach to the Fifth Five-year Plan beginning from 1974-75, were contained in Press Note dated February 2, 1973. Through this, the Government have clarified that the Industrial Policy Resolution of 1956 would continue to govern the policy for achieving the objectives of growth, social justice and self-reliance in the industrial sphere. The Press Note referred to the Government policy in regard to the public sector, small-scale industries, small and medium entrepreneurs, large industrial houses, foreign concerns and joint sector. All industries of basic and strategic importance or in the nature of public utility services would be in the public sector.

The manufacture of specified articles is reserved for units in the small scale sector. These include products like absorbent cotton, miniature bulbs, leather footwear, domestic electric appliances, certain paints and varnishes, specified plastic processed products including spectacle frames, blow moulded containers and polythylene films, safety matches, thermometers, water meters, cycle tyres and tubes, low tension insulators, PVC and VIR wires of domestic types, automobile ancillaries, garage equipment, such as spark plug testers, screw extractors, ring expanders, compressors and pullers of all types, as well as desert type room coolers, rubberised cloth, household knitting machines and domestic utensils other than stainless steel. The definition of a small-scale industry eligible for the manufacture of such articles would be a unit with an investment in machinery and equipment up to Rs. 750,000 and in the case of ancillary industries up to Rs. 1 million.

The Indian Government's policy is to encourage the competent, small and medium scale entrepreneurs in all industries. Such entrepreneurs would be preferred *vis-a-vis* larger industrial houses and foreign majority companies for setting up new capacities.

Cooperatives and small and medium entrepreneurs would be encouraged to participate in the production of mass consumption goods, with the public sector also taking an increasing role.

Larger industrial houses i.e. all undertakings which by themselves or in inter-connection with other undertakings, have assets not less than Rs. 200 million would be eligible to participate in specified industries along with other categories of manufacturers provided that the items of manufacture would not be one of those articles reserved for production in the public sector or in the small scale sector. Larger industrial houses would ordinarily be excluded from the industries not included in this list of specified industries except where production is predominently for exports. The list includes metallurgical industries, such as ferro alloys, steel castings and forgings, special steels and non-ferrous metals and their alloys, boilers and steam generating plants, prime movers, namely, industrial turbines and internal combustion engines, electrical equipment including equipment for transmission and distribution of electricity, electrical motors, electrical furnaces, X-ray equipment and electronic components and equipment, mechanised sailing vessels up to 1000 DWT, ship ancillaries and commercial vehicles, industrial machinery, machine tools, tractors and power tillers, earth moving machinery, industrial instruments, scientific instruments, inorganic and organic heavy chemicals, fine chemicals including photographic chemicals, synthetic resins and plastics, synthetic rubbers, man-made fibres, industrial explosives, insecticides, fungicides and synthetic detergents, drugs and pharmaceuticals, pulp and paper products, automobile tyres and tubes, refractories and furnace lining bricks and cement, both portland and asbestos.

It is in respect of the above mentioned items that the larger industrial houses would be normally allowed to operate. In respect of those items outside this list, their proposals for capacity can be considered if they can undertake a minimum export obligation of 60 per cent or more of the new or additional production which should be achieved within a maximum period of three years. In regard to the articles which are reserved for the small scale sector, larger industrial houses can be considered for capacity expansion provided their minimum export obligation would be 75 per cent of the additional production again to be achieved within a maximum period of three years.

The Industrial Licensing Policy in regard to the foreign concerns i.e. foreign companies, their branches or subsidiaries or companies in which more than 50 per cent of the paid up equity is held by foreign companies would be that such concerns are eligible to participate in industries in the same manner as larger industrial houses. Their investment would also be subject to the conditions that were stipulated in a Press Note issued by the Ministry of Finance in

February 1972. The Press Note stated that companies with foreign holdings exceeding 75 per cent would raise 40 per cent of the estimated cost of expansion, by issue of additional equity capital to Indians only, and that the corresponding proportions for companies with foreign holdings exceeding 60 per cent but not exceeding 75 per cent would be 33⅓ per cent and those with foreign holdings exceeding 51 per cent but not exceeding 60 per cent would be 25 per cent. Also the policy for the foreign concerns would be examined with special reference to the aspect of technological know-how, export possibilities and overall effect on the balance of payments.

As regards the joint sector (public and private), the Industrial Policy aims at the objective of reducing the concentration of economic power. In appropriate cases, the Central and State Governments have taken equity participation with private parties. This type of joint industrial unit is a device that might be resorted to in specific cases having regard to the production targets of the Fifth Plan. The joint sector would also be a promotional instrument in cases where State Governments might go into partnership with new and medium entrepreneurs in order to guide them in developing a priority industry. The joint sector, however, would not be permitted to be used for the entry of larger houses, dominant public sector undertakings and foreign companies in industries in which they are otherwise preclued.

Detailing the Industrial Licensing Policy decisions taken from time to time, the Government of India has recently published 'Guidelines for Industries 1973-74'. The publication details not only the industrial policy and procedures but also sets out the guidelines for selected industries for the benefit of entrepreneurs, both domestic and foreign.

GROWTH OF PUBLIC SECTOR IN INDIA

Towards the achievement of economic self-reliance, India's public sector undertakings have contributed their valuable mite, in terms of production growth, product diversification, creation of employment opportunities, export promotion, import substitution and development of ancillary and small scale industries. In a recent report submitted to the national Parliament, the Committee on Public Sector Undertakings has pointed out "it is beyond doubt that if public sector had not been launched, the industrial growth that we are witnessing today (in India) would not have been possible and the long strides taken towards self-sufficiency in many key industries would not have been there".

India's public sector has been growing, both in absolute as well as in relative terms. M/s. Hindustan Steel Limited has, so far, produced 11.5 million tonnes of pig iron for sale and 26 million tonnes of saleable steel of the value of Rs. 27,000 million. M/s. Heavy Engineering Corporation Limited has produced goods worth Rs. 950 million. The share of M/s. Hindustan Machine Tools Limited in indigenous production is more than 40 per cent. The Tiruchi Plant of M/s. Bharat Heavy Electricals Limited (BHEL) has manufactured eight industrial boilers. The Hyderabad Plant of BHEL has supplied 6 industrial turbo sets and its Hardwar Plant has supplied 750 electrical motors to thermal and hydro stations thereby obviating the import of equipment of the value of Rs. 2800 million. M/s. Heavy Electricals (India) Limited has so far manufactured 10 hydro sets and five thermo sets apart from manufacturing power transformers and circuit breakers of sizes which are the largest so far, required in the country. M/s. Hindustan Shipyard have built 58 ships including 47 ocean-going cargo liners. The Oil and Natural Gas Commission has so far, produced and sold over 24 million tonnes of crude oil and about 2024 million cubic metres natural gas thereby saving foreign exchange to the tune of Rs. 2500 million. The present refinery capacity of public sector enterprises is 11.75 million tonnes. This capacity is expected to increase to 17.75 million tonnes after the commissioning of Mathura Refinery. M/s. Air India has now a fleet of nine 707 aircrafts and four 747 aircrafts. M/s. Indian Airlines has a fleet of 51 aircrafts. The Shipping Corporation of India has increased its fleet from 19 vessels in 1961 to 95 vessels as by March, 1973. The share of public sector shipping in the total tonnage of the country stands at 46.75 per cent.

While such is the positive contribution made by the undertakings towards self-reliance in key industrial sectors, the country continues to depend on imports. For instance, in 1971-72, the imports of iron and steel were of the order of Rs. 2450 million, of petroleum products Rs. 1940 million and of fertilizers Rs. 1130 million.

The total internal resources generated by public undertakings have risen from Rs. 1040 million in 1967-68 to Rs. 2150 million in 1971-72.

The public enterprises have been able to generate employment to the extent of 6 to 8 per cent in each year. As by the end of 1971-72, the total staff strength of the enterprises stood at 700,000 persons with a total wage bill of more than Rs. 4150 million for that year.

The public sector enterprises have spent more than Rs. 340 million on maintenance of townships and other social overheads like education, medical facilities and transport facilities for their employees during 1971-72.

Dispersal of public sector enterprises in various parts of the country has made significant contribution in developing some of the traditionally backward areas like Bhilai, Rourkela, Bokaro, Ranchi and Assam. It is hoped that the work initiated in this direction would be continued.

While the share of the Public Sector in the import trade has gone up to three-fourths of the total import bill, its share in the export trade is one fifth of total exports.

In the process of development of ancillary industries, so far, 12 Public Undertakings have set up 139 ancillary units. It is felt that there is a good scope for setting up more ancillary industries around giant public sector enterprises. Such an arrangement would go a long way in solving the gigantic problem of unemployment and removing regional disparities.

ALUMINIUM TO REPLACE COPPER FOR TRANSFORMERS

For the first time in India, primary aluminium tube has come to be used in the manufacture of 132 KV transformer in place of copper tubes which were hitherto being imported from abroad. The successful endeavour of M/s. Heavy Electricals (India) Limited, Bhopal in replacing copper tubes with the aluminium ones is expected to save foreign exchange at a value of about Rs. 0.5 million per year. In addition to this, cost of 132 KV and 220 KV current transformers is estimated to come down considerably.

India is soon to achieve near self-sufficiency in the manufacture of aluminium. The country's total aluminium production during 1971-72 was of the order of 179,000 tonnes as compared to 178,000 tonnes in the preceding year.

PRODUCTION TREND OF SODA ASH

Production of soda ash in India improved to 485,970 tonnes in 1972 as against 478,975 tonnes in 1971. The installed capacity for this product is around 508,000 tonnes per year. Additional capacity of the order of 726,000 tonnes has lately been approved. Of this, schemes totalling up to a capacity of 500,000 tonnes are expected to materialise by 1978-79, raising the total available installed capacity in the industry to nearly one million tonnes by 1978-79.

Of the four units in the line, production of three units is based on standard solvay process while one unit is adopting modified solvay process. Technology for production of soda ash by standard solvay process is fairly well established in the country and needs no foreign collaboration. In the modified solvay process, however, proposals for foreign collaboration, including import of design and engineering know-how for fabrication of plant and equipment indigenously is permissible.

SKETCH ON CIGARETTE INDUSTRY

In India, there are 10 factories engaged in the production of cigarettes in the organised sector. Their annual production at 62,000 million numbers represents full utilisation of the installed capacity. No imports of cigarettes are allowed. Recently, an additional capacity of 75,900 million numbers has been approved. Of this, a capacity of 18,000 numbers is likely to materialise by 1975. Against this, domestic demand for cigarettes by 1978-79 has been estimated at

100,000 million numbers corresponding to an installed capacity of 150,000 million numbers.

The essential items required by the industry are tobacco, cigarette paper and filters. All these are indigenously available. Only a certain amount of flavouring requisites are required to be imported. Besides meeting home demand, the industry is also making substantial exports. The exports were of the order of Rs. 15.70 million in 1971-72. During the first three quarters of 1972-73, the exports of cigarettes were of the order of Rs. 16.42 million. Of this, U.S.S.R. alone accounted for an intake worth Rs. 16 million. Hungary, Bahrein Islands, Nepal and Bangladesh were among the other buyers.

SYNTHETIC YARN CRIMPING MACHINE DEVELOPED

Claimed to be India's first, the synthetic yarn crimping machine fabricated by M/s. Marchon Textile Industries Private Limited, Bombay, is expected to save foreign exchange ranging from Rs. 100 to Rs. 120 million per annum.

The firm is planned to manufacture initially 15 machines every year, but the number can be raised to 24 per year within a period of one or two years. Currently, it is engaged in the manufacture of machine with 96 spindle-capacity costing about Rs. 400,000 to Rs. 500,000. It would undertake production of 192 spindle-capacity machines gradually; the cost of each has been estimated at about Rs. 1 million. Presently, nearly 25 per cent of the components are required to be imported from abroad as these are not manufactured indigenously. Most of the manufacturers of the machine in the world are dependent upon Germany for supply of these components. However, within a few years, the machine is expected to be manufactured with completely indigenous components.

At present, the total installation of such machines in India ranges between 80 to 85 numbers. The domestic demand for these machines is related to the production of nylon flat yarn as these are primarily useful in processing of the yarn. Of the total production of synthetic yarn in the country, crimped yarn accounts for a negligible share. However, the estimates indicated that the proportion of crimped yarn during 1973-74 is expected to go up to about 20 per cent in the overall production of synthetic yarn.

The firm has to its credit the sale of three crimped yarn machines so far. Further, it has orders on hand for nine machines. It has plans to manufacture double winders and high speed pineapple cone-winders.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

A NEW GELLING AGENT FOR HYDROCARBON FUELS

An instant gel for hydrocarbon fuels has been developed by the Explosive Research and Development Laboratory, Poona. It is basically granulated aluminium soap of a mixture of fatty acids with finely divided rubber articles ingrained in them and coated with alpha naphthol whose function is of a peptiser and antioxidant.

The product is used for gelling petrol and other hydrocarbon fuels instantly for use in incendiary bombs or such other ammunitions. Its advantages over other existing materials lie in its properties of gelling with ease without the necessity for interior mechanical mixing or the aid of external additives at temperatures as low as 0°C whereas the other gelling agents do not form a gel below around 15°C without the use of large amounts of peptising agents or the application of heat to raise the fuel to higher temperatures.

Present consumption of gelling agents in the country has been estimated to be 25 tonnes per annum which is likely to be raised to 40-50 tonnes per annum in the near future. At present, the demand is being met by an inferior type of gelling agent, whose use is likely to be discontinued with the introduction of this superior gelling agent.

The raw materials required for the manufacture of instant gel include coconut oil, sodium hydroxide, rectified spirit, sulphuric acid, benzene, latex, aluminium sulphate, naphthol and talc. All these materials, except naphthol, are indigenously available. The major items of equipment required are also indigenously available or can be got fabricated.

The process developed at the laboratory scale has been successfully scaled up to the pilot plant capable of producing 100 kgs. of the product per batch. Five tonnes of the material have been produced in such batches. The material produced was supplied to the users for their trials. The consumers have expressed their satisfaction over its uses. Adequate amount of samples of the product can also be supplied to the entrepreneurs on request directly by the Explosive Research and Development Laboratory, Poona.

MICROWAVE AND HIGH FREQUENCY FERRITES

The Solid State Physics Laboratory (SSPL), Lucknow Road, Delhi-7, has recently developed a process for the preparation of microwave and high frequency ferrite materials (6 grades), employed in microwave components, such as isolators, circulators, phase shifters, which are used in radars, communication systems and research equipment. These materials also find an application as cores in high frequency inductors and transformers.

These ferrites are prepared by a process very similar to that employed in the ceramic industries. The starting raw materials are taken in the form of oxides, carbonates or hydroxides. The required quality of each of the raw materials is calculated and taken according to their nominal composition in the ferrite to be prepared. The various process parameters involved, such as ball milling hours, pre-sintering and sintering temperature and time, have been fully standardised for each of the grades. Other parameters, such as ball milling details, particle size control at different stages, binder concentration and its drying rate, pressure for compacting the material in different shapes, rate of heating and cooling of the furnace have also been evolved.

A completely standardised procedure has been laid down for the processing of the ferrites, with a starting charge of about 1 kg. in each batch. Samples in various sizes and shapes like slabs, discs and toroids have been prepared.

At present, about 250 kg. per year of the material is being consumed by manufacturers such as Indian Telephone Industries, Bangalore and Bharat Electronics Limited, Bangalore, and the demand is met entirely by imports. In the near future, about 400 kg. of these ferrites will be required per annum.

Over 20 kg. of the material has been prepared in batches of 1 kg. each and successfully tested by the Laboratory. These materials have been approved and accepted by Indian Telephone Industries, Bangalore and Bharat Electronics Ltd., Bangalore.

The main raw materials required in the process are ferric oxide, manganese carbonate, nickel carbonate, basic zinc carbonate, cobalt carbonate, aluminium hydroxide dry, calcium oxide and carbonate, magnesium carbonate light, copper carbonate basic and polyvinyl alcohol. All these are available indigenously.

Ball mills furnaces, drying ovens, sieving machines, hydraulic press, electrical equipment like multimeters, milivoltmeters, Q-meter and micro-wave X-band test bench, are the equipment required in general and these are available indigeneously. Any soft ferrites manufacturing industry already in the line, can manufacture these special ferrites also without any additional investment.

INITIATOR FOR AMMUNITION DEVELOPED

At present, explosive compounds which can be used as initiators in ammunition are very few in number and even these have their limitations for use.

A new initiator has been developed by the Explosive Research Development Laboratory (ERDL), Ministry of Defence, Poona which combines in it the most desirable properties of storage, stability and compatibility with copper for use in detonators, cap compositions and primers for ammunition. The properties of this initiator indicate that it can replace with advantage ASA composition in civil and military detonators.

One of the main advantages of this initiator is its freedom from the formation of any type of dangerous compound with copper when in contact with copper shells and tubes. In gassy mines, where aluminium detonators cannot be used, detonators filled with this initiatory explosive in copper tubes can be safely used.

The product can be used as a filling component in all types of detonators viz. safety detonators, electric detonators etc. and as an initiating material for filling in caps of various types.

The present demand is being met by Indian Detonators Ltd., Hyderabad and Indian Explosives Ltd., Gomia, Bihar. It is expected that there will be a good future demand for both, civil and military uses.

In the process developed by ERDL, the solutions of sodium salt of diazoaminotetrazolic acid and magnesium styphnate are mixed in a mixing vessel and are added to a reaction vessel where solution of lead nitrate is also added. The reaction vessel is stirred continuously and the temperature is maintained within the desired range. After the reaction is over, the contents of the reaction vessel are filtered or decanted to separate mother liquor from the precipitate. The precipitate is washed and dried.

Batches of 50 gms. of the product have been established in the laboratory. The process can be scaled up for bulk manufacture. An adequate quantity of the new initiatory compound or filled detonator with this compound can be supplied if required by entrepreneurs.

The main raw materials required for the preparation of the new initiatory composition are aminoguanidine bicarbonate, magnesium styphnate, lead nitrate and magnesium oxide. Magnesium styhpnate and aminoguanidine bicarbonate are available from Director General of Ordnance Factories. Magnesium styphnate is also available from M/s. Indian Detonators Limited, Hyderabad. Aminoguanidine bicarbonate can also be produced by the electrolytic process developed by the Central Electro-chemical Research Institute, Karaikudi. Lead nitrate and magnesium oxide are available as normal trade items.

The machinery required for the manufacture of this product does not include any special equipment. All the required equipment can be got fabricated in any workshop to a size suited to the quantity of product that the entrepreneur decides to manufacture.

FERROUS CASTINGS, FORGINGS AND STRUCTURALS

Indian economy has a clear comparative advantage for the export of iron and steel castings. It has a decisive advantage in exporting forgings also, particularly the close die variety. India-made fabricated steel structurals are eminently exportable and an annual share of about Rs. 200 million could be secured by the country in the world market as against the present level of Rs. 60 million per year. These are the conclusions of an Inter-Ministerial Working group on Export Production Planning of Ferrous castings, forgings and structurals.

The developed world comprising North America, Western Europe including the U.K., Japan and Australia constitute 80 per cent of the total world consumption of *iron castings*. The significant trend in these countries has been the spiralling of wages especially of foundry workers. Consequently, there is a pronounced tendency in these countries to resort to off shore procurement of iron castings as illustrated by M/s. Scania Valis of Sweden, a leading automobile manufacturer, obtaining their requirement of cylinder blocks and cylinder heads for cars from a Brazilian Foundry. India has a distinct comparative advantage in the field of iron castings, as all the raw materials are practically indigenous and the iron foundry labour is highly skilled and comparatively inexpensive. According to the latest U.N. Trade Statistics, the developed world alone is importing about $ 40 million worth of unmachined iron castings per year, in addition to imports of several times this value in the form of machined cast iron components. As against such a global picture, the Trade Development Authority of India has itself received in the course of a year, enquiries from leading automotive and tractor manufacturers in U.S.A., U.K. and other countries of West Europe for the supply of iron castings in India to the tune of Rs. 100 million per year. In addition to these, substantial enquiries are being received by the Engineering Export Promotion Council and other Export Promotion agencies for hardware and sanitary castings of the order of about Rs. 38 million per year. In sum, it is assessed that an export capacity of Rs. 100 million is well within the reach of the Indian foundry within a span of three years.

India has a long tradition and experience in the foundry industry. An iron pillar near Qutab Minar in Delhi is a standing example. Currently, the Indian foundry industry is estimated to have an annual capacity of about 800,000 tonnes in the organised sector, comprising 0.5 million tonnes of hardware castings represented by items like railway sleepers, cast iron pipes, special manhole covers and frames and pulleys and 300,000 tonnes of industrial castings for use in a wide range of industries such as automobiles, machine tools, diesel engines, pumps, compressors and industrial machinery.

The specific items of industrial castings with good export potential are grey and alloy iron castings, namely, brake drums and discs, exhaust manifolds, flywheels and pulleys, crank cases, cylinder blocks and heads for automobiles; malleable iron castings, namely, brackets, shackles and housings for automobiles; and mechanite iron castings, namely, beds and frames for machine tools.

Steel castings as distinct from iron castings are wholly manufactured from steel scrap. They find major application in railway rolling stock and machinery industries. According to the U.N. Trade Statistics, the global import of these castings in the rough un-machined condition is about $ 20 million per year. If account is taken of global import of machined steel castings as such or in the shape of end-equipment like rolling stock, the global demand for the item would run into several hundred million dollars. To give an example, the European railways are reported to be currently considering a proposal for the conversion of conventional couplers to uni couplers in their entire fleet of wagons. This proposition alone calls for a supply of steel castings for such couplers to the tune of 120,000 tonnes a year for a period of seven years. India's own export of railway wagons are rising steeply year to year. Thus foreign demand would not be a limiting factor in India's export trade of steel castings. The effective capacity in the country in the organised sector is estimated at about 125,000 tonnes per year. In addition, substantial capacity in the small scale electric furnances is reported. India's current direct export of steel castings is less than 2,000 tonnes and the spare unutilised capacity available for export is estimated at not less than 60,000 tonnes per year.

The specific items of steel castings with the largest export promise are wagon couplers, and cast steel bogies for wagons. Other items with potential foreign demand are manganese steel lined plates for cement mills, steel castings for mining and metallurgical equipment and steel castings for sugar mills.

Let us now take the export potential of ferrous forgings from India. *Steel forgings* are of three major types : free-hand, upset and closed die. Among these, closed die forgings find a massive application in the automobile, tractor and earth moving equipment industries. Global import statistics of forgings indicate that import trade mostly for closed die forgings is currently running at the rate of $ 35 million per year in rough unmachined conditions. In addition, huge imports of machined forgings are well-known to be taking place, particularly for the automobile industry. The value of trade enquiries recently received from abroad for the supply of forgings from India is in the neighbourhood of Rs. 50 million. The Polish automotive industry has recently placed a firm export contract with a few forging shops in India for supply of closed die forgings worth Rs. 12 million. Similarly, the Czechoslovak industry has entered the Indian market for the purchase of forgings. The U. K. and West German automotive manufacturers have relayed several enquiries to exporting units in India for substantial quantity of forgings. The current export of forgings is only a marginal Rs. 4 million but the high potential is evident from the type of enquiries being received.

The specific items of forgings with substantial export potential from India are crank shafts, connecting rods, gear blanks, axles, yokes and drop forged petroleum flanges.

In the field of *fabricated steel structurals*, the Indian industry has made quite a headway. Structurals are fabricated to a wide range of designs and end-uses; bridge and roof sections, power and substation

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structures, transmission line towers, hydraulic gates and gearings, penstocks, pressed steel tanks and tubular structurals being some of the examples. The leading structural fabricators in India have a proven design capability comparable with the best in the world. The country is currently exporting Rs. 70 million worth of fabricated steel structurals mainly in the form of power station and power line structures to Afro-Asian markets. Exports of transmission line towers have also been made to the U.S. market. The structural fabrication industry in India has a good record particularly in the last decade or so, of winning global tenders under World Bank and Asian Development Bank financing, in the face of stiff world competition from such giants as SAE of Italy and Balfour-Beaty of U.K. On the basis of the large volume of global tenders received particularly from the developing countries in connection with infrastructural projects, it would be possible for India to have a share of the world market to the tune of Rs. 200 million per year in a measurable span of time as against the present level of exports.

The steel sections required for fabrications for export are, by and large, available indigenously. There is a large un-utilised capacity in the industry. For meeting foreseeable foreign demand, even capacity can be expanded speedily as most of the equipment required for structural fabrication like punching and shearing machines and welding equipment are not only indigenously manufactured but are also readily available. ☐

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MEDICAL AND SCIENTIFIC INSTRUMENTS IN OVERSEAS SUPPLIES

India has established itself as a competent supplier of a broad range of scientific, medical, optical, measuring and controlling instruments to overseas markets. The export value of such supplies was of the order of Rs. 16.5 million in 1971-72 as compared to Rs. 14.22 million in 1970-71.

The export value nearly doubled to Rs. 22.65 million during the first three quarters of 1972-73 as against Rs. 12.00 million in the corresponding period of the previous year. Among the important customers in 1971-72 were Kuwait, Soviet Union, Sudan, Canada, Nigeria, German Federal Republic, Philippines and Japan for medical instruments; Sudan, Kenya, Iraq, Spain, U.K., U.S.A., Cyprus and Greece for surveying, mathematical and calculating instruments and Australia, Malaysia, U.K., U.S.A. and Sweden for other varieties of precision instruments.

A small scale unit in the line, M/s. Jambu Pershad & Sons, Nicholson Road, Ambala Cantt. have recently contributed their bit to the export effort in instruments. The firm has recently bagged an order valued at Rs. 70,000 for supply of scientific instruments to Kenya. Another order secured by the firm relates to the export of medical glassware valued at US $ 47376 to the Ministry of Trade and Industries, Tanzania. Additionally, the firm will be supplying medical equipment worth about Rs. 15,000 to Zambia.

PREFAB BUILDING COMPONENT PLANTS TO IRAQ

India is to set up two plants for pre-stressed, precast concrete building components in Iraq under an agreement signed recently. The components will mainly consist of beams, columns, slabs and other building materials. Each plant will have a capacity of 60 to 70 cubic meters per day. The work will include the supply, erection and commissioning of the machinery. M/s. Hindustan Housing Factory Ltd., New Delhi is working on the project.

India will also depute experts to advise Iraqi authorities in regard to construction of major public works in that country. The National Buildings

Construction Corporation is to collaborate in pile-driving works, construction of large projects and silos. The collaboration is in the form of a joint venture in which the Indian participation will be by way of providing necessary equipment and supervision for a specified period.

India has informed Iraq that she is in a position to meet the requirements of that country for construction of plant equipment and materials. Iraq has expressed its willingness to buy the same from India.

Besides, Iraq has also agreed to make adequate space available for putting up a display centre by the National Buildings Organisation (NBO) of the Ministry of Works and Housing. This would help to carry on the process of familiarising Iraqi builders and construction agencies with Indian equipment, material and fixtures.

Recently, a four member Indian delegation has visited Iraq. An Iraqi delegation is to shortly visit India in this connection.

Building and construction equipment industry is well established in India and is capable of manufacturing a wide range of equipment including building and construction machinery, earth moving machinery, air and gas compressors, conveyors and material handling equipment including light, medium and heavy structurals.

The building and road construction machinery has a licenced capacity worth Rs. 100 million per annum while the installed capacity is of the order of Rs. 72 million. The range of manufactures includes concrete mixers, vibrators, hot - mix plants, tar boilers, crushers and granulators, prestressed concrete equipment, asphalt mixers, paver finishers and pile driving equipment.

EXPORT TRADE IN CERAMIC MATERIALS

India's export trade of ceramic products amounted to about Rs. 3 million in 1971-72. Export earning of ceramic, sanitary and plumbing fixtures and fittings amounted to Rs. 1.56 million. Sink wash basins are the prime category in this group, mainly supplied to Kenya, Mauritius, Sudan and Uganda. Ceramic bricks, tiles and pipes, forming the next best category of export trade, fetched Rs. 0.8 million. Building bricks and roofing tiles, ceramic piping and glazed ceramic settes are the other important products supplied overseas. In this section, Nepal, Sri Lanka, Muscat, Sudan and Saudi Arabia figured prominently in the list of importers. Laboratoryware and other articles of ceramic materials were supplied in the year to Australia, Kenya, Uganda and Abu Dhabi. Pottery is yet another category of export growth. Tableware of porcelain is the main export line in the above year; the customers include the United Kingdom, Uganda, Nepal and Zambia.

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Indian pottery enjoys good reputation abroad for its exquisite shapes and sizes—each piece a perfect specimen of traditional craftsmanship.

M/s. E.I.D. Parry Ltd., Parry's Corner, Madras, is an important exporter in pottery works. Theirs is claimed to be one of the oldest organised pottery works in India, having started the production of stoneware jars as acid containers in Ranipet in South India, the place famous for the first battle between the Nawab of Arcot and Robert Clive in 1751. Since then innumerable traditional patterns handed down by old craftsmanship were improved by the company's skill and technology to turn out pickle jars, stew pots, screw jars, snuff jars and a variety of ornamentalware, in varying sizes. A major breakthrough in the annals of the company occured with the introduction of vitreous China in the manufacture of sanitaryware—under technical collaboration with United Kingdom. The ceramic complex in Ranipet today produces a wide variety of products including sanitaryware, domesticware and industrial tower packings. Today, 'Parryware' is a completely Glazed Vitreous China and is at once resistant to grease, acid and alkali attack.

An expanding home market for 'Parryware' has helped promote it to several export markets and it has made in-roads into East Africa, West Asia and some of the South East Asian markets. The labour intensive nature of the industry is an important characteristic of the competitiveness of the product while constant research has helped improve its quality. Strict quality control, pre-shipment inspection and conformity to the standards laid down by the Indian Standards Institution (ISI) are guarantees that the company's products provide for the importer,

ELECTRICAL POWER MACHINERY ON EXPORT FRONT

India's exports of electrical power machinery and switchgear amounted to Rs. 47.5 million in 1971-72, registering an improvement over the preceding year's export value at Rs. 44.68 million. During the first three quarters of 1972-73 (April-December 1972), the exports were of the order of Rs. 41.25 million.

A wide variety of electrical power machinery is supplied overseas. The range includes complete generating sets with diesel engines and steam engines, generators and parts, AC squirrel cage induction motors in 3 phase, AC slipring motors, electric motors and their parts, transformers in a variety of specifications and their parts, rotary and static convertors, rectifiers and rectifying apparatus, choke coils, oil circuit breakers in various ratings, motor starters, switch fuse units in various switch ratings, fuse rewireable, fuses of high rupturing capacity, relays, switch boards and control panels, plastic switches, control and switchgears, lightening arrestors, automatic voltage regulators, plug socket holders of plastic and other material and parts and accessories of switchgears.

Malaysia, West Germany, Sir Lanka, Guyana, Tanzania Republic, Kuwait, Thailand, Dubai, New Zealand, Turkey and Indonesia are the leading markets.

M/s. English Electric Company of India Limited, 8, Netaji Subhash Chandra Road, Calcutta, one of the firms engaged in the manufacture of electric, magnetic and galvanic apparatus, machinery and appliances and various kinds of light, heat, sound and power apparatus, machinery and gadgets exported their products to the tune of Rs. 1.47 million during 1971-72. The firm's exports rose to this level from only Rs. 442,000 in 1968-69, Rs. 540,000 in 1969-70 and Rs. 729,000 in 1970-71.

During the year, the firm exported products such as L.T. distribution equipment including switches, switchboards, relay, switchgear control panels and signal generators.

EXPORT GROWTH IN CASHEW KERNELS

The export value of cashew kernels from India touched a record level of 65,950 tonnes at Rs. 685.30 million in 1972-73 as against 60,380 tonnes valued at Rs. 613.30 million in 1971-72. During 1969-70 and 1970-71, these exports totalled only Rs. 574 million (60,625 tonnes) and Rs. 520.66 million (50284 tonnes), respectively.

During 1972-73, U.S.S.R. and U.S.A. were the leading importers. Canada, Federal Republic of Germany, German Democratic Republic, Japan and Hong Kong were the other major markets for Indian cashew during the year. Alongside the kernels, cashewnut shell liquid was also supplied abroad to the tune of 4980 tonnes valued at Rs. 5.75 million in 1972-73. U S.A., Japan, Yugoslavia and Rumania were the prominent buyers. In 1971-72, the export of the shell liquid totalled 5515 tonnes at Rs. 5.24 million.

Contributing to the overall exports in the line, M/s. Vijayalaxmi Cashew Co., Quilon, supplied overseas a total of about 3462 tonnes of cashew kernels valued at Rs. 34.94 million in 1971-72, and 3332 tonnes worth Rs. 35.96 million in 1972-73. U.S.A. and Canada with a total intake valued at Rs. 11.23 million and Rs. 17.61 million in 1971-72 and 1972-73, respectively were the firm's major customers during these years. UK, USSR, East European countries, Japan and Australia were their other major markets.

Apart from cashew kernel, the Quilon firm is also exporting cashew nut shell liquid, mainly to U.K. and Japan. The value of such exports improved to Rs. 0.56 million (366 tonnes) in 1972-73 compared to Rs. 0.31 million (213 tonnes) in 1971-72. The firm produces about 4000 tonnes of cashew kernels and 500 tonnes of cashewnut shell liquid every year.

COTTON MANUFACTURES TO WORLD MARKETS

M/s. Laxmi Vishnu Textile Mills Limited, 9, Wallace Street, Fort, Bombay, constitutes an example of India's export dynamism in the textile sector. The firm has succeeded in exporting one third of its production in 1972 at Rs. 46.90 million. Its products were absorbed not only by the developing countries but also by the highly sophisticated markets abroad.

The export range of the firm includes coatings, dhoties, sarees, longcloth, prints, shirtings, poplins, drills, voils, lawn cambrics, butta fabrics, gaberdines and canvas yarn counts 2 to 120s. Besides, it is also engaged in bleaching, mercerising, dyeing, printing and finishing jobs.

India's total exports of cotton manufactures stood at Rs. 1000 million in 1971-72. The country exports, a wide variety of cotton manufactures to a large number of countries including the developed ones such as U.S.A., U.S.S.R. and U.K. The export range includes lungies, dhoties, shirtings, sarees, coloured bleeding Madras, handkerchiefs, bedticking, furnishing, cloth, poplin broadcloth, sheeting, card yarn and combed yarn, drill denim, flannelite bleached and unbleached, muslin, voils, longcloth, poplin broadcloth, sheeting card yarn and combed yarn, drill derim, flannelite bleached an unbleached, muslin, voils, longcloth, poplin, handprinted sarees, knitted and woven cotton fabrics, tulle lace embroidery, ribbon trimming and other small wares of cotton, imitation leather cloth, cotton fabrics coated with artificial plastic materials, cotton bags and sacks for packing, tarpaulin tents, travelling blankets, bed sheets of all types, handloom napkins, pillow covers, table covers, towels (powerloom and handloom), bedlines, curtains and a comprehensive range of unspecified varieties.

U.S.A., U.K., U.S.S.R., Afghanistan, Iran, Iraq, Netherlands, New Zealand, Nepal, Federal Republic of Germany, Bulgaria, Rumania, Sudan, Canada, Japan, Poland, France, Sweden, Australia, German Democratic Republic and Yugoslavia are the prominent importing countries.

EXPORT PERFORMANCE AND POTENTIAL

INDIA'S CALL TO REMOVE TRADE BARRIERS

Addressing the Ministerial meeting at the Seventh World Multilateral Trade Negotiations sponsored by the General Agreement on Tariffs and Trade (GATT) in Tokyo recently, India's Commerce Minister, Professor D. P. Chattopadhyaya has made a strong plea for the removal of trade barriers against developing nations to ensure for them a greater share in the expanding world trade. The Minister emphasised the need for immediate implementation of the Generalised Scheme of Preferences (GSP) by the richer nations and removal of non-tariff barriers against imports from developing countries.

While welcoming the recent trends towards liberalisation of world trade as a positive development, he conveyed the anguish of the developing countries over the prospect of their meagre gains being eroded by the recent enlargement of preferential arrangements among developed nations.

One of the pre-requisites for achieving the objectives of the GATT negotiations being held in Tokyo would be to find acceptance for the concept of preferential treatment for development countries in all sectors of the negotiations. The concept is not based on charity of the more affluent nations but flows from the basic principles of constructive partnership in development accepted by the international community to reverse past inequities.

The Indian Minister has also underlined the need for providing free access for primary and processed commodities, especially tropical products to the affluent markets at stable and remunerative prices. A great majority of developing countries have been significantly dependent on the export earnings of these products. It would, therefore, be necessary to guarantee them a specified share of consumption or imports of a particular commodity in the developed countries with scope for progressively increasing the share.

The Minister stated that the potential for expansion of trade among developing countries would also need to be utilised for the benefit of all. India would regard the full utilisation of trade and economic complimentaries among developing countries as an important instrument of international economic cooperation. To this end, she has been cooperating in endeavours to forge closer trade links with neighbouring countries particularly with her immediate neighbours. Also she is prepared to contribute her part to expand their export earnings to finance their development.

Referring to the monetary scene in the world which has been characterised by disturbed conditions interfering with the harmonious expansion of trade and international capital movement, India's Minister reiterated his country's view that decisions on the world monetary system must be negotiated and adopted on a world wide scale if they were to be truly responsive to the needs of international commonity as a whole.

The draft Declaration of the Preparatory Committee of Contracting Parties of the GATT is now being discussed in the above meeting by the Ministers of the contracting countries to GATT for laying down the guidelines for the multi-lateral trade negotiations which are expected to begin subsequently.

The Declaration seeks to provide adequate weightage to developing countries in future global trading patterns taking into account their needs to increase foreign exchange earnings and diversify exports as also accelerate the growth of trade and secure a better balance between developing and developed nations. The declaration suggests that the negotiations should aim at reduction or the elimination of non-tariff barriers. It also seems to include an examination of the possibilities of co-ordinated reduction or elimination of all barriers to trade in selected sectors as a complimentary technique. It emphasises the importance of maintaining and improving the GSP to which developed countries committed themselves at the UNCTAD conference.

U. S. President's Trade Reform Act proposing blanket authority to adjust tariffs, non-GATT tariff barriers and related trade questions, was submitted to U. S. Congress in April 1972 and is being studied by the House of Representatives. The proposed multilateral negotiations take inspiration from the initiative of President Nixon and hence are termed Nixon Round of Negotiations.

EXPORT TRADE IN ORGANIC CHEMICALS

The export value of organic chemicals supplied by the Indian industry to the world markets during 1971-72 was in the neighbourhood of Rs. 33 million. In the first three quarters of 1972-73, these exports fetched Rs. 23 million.

The prominent areas of export capability already established by India in the international markets are diphenyl methane, methyl chloride, trichloroethylene, undenatured ethyl alcohol, anthraquinine, benzanthrone, beta ionone and beta hydroxy napthoic acid.

Argentina was the major market for dephenyl methane in 1971-72. The export of benzene which was negligible in this year rose to as much as Rs. 1.8 million in the first three quarters of 1972-73 with a sizeable offtake by the U. K. market. U.S.A. has been the consistent importer of methyl chloride; for ethylene glycol, Netherlands has been the prime buyer. Japan and U. K. have shared a Rs. 8 million market for ethyl alcohol in 1971-72.

Anthroquinine is another important line of export in the organic chemicals group and Switzerland, Japan, Italy, U.S.A. and German Federal Republic were the leading buyers in 1971-72. Italy and Japan accounted for the entire exports in this line in the subsequent year. Benzene exports are mainly in the direction of Switzerland and Netherlands. The German Federal Republic, Italy and U.S.A. imported sizeable quantity in the first three quarters of 1972-73.

U.S.S.R. is a significant buyer of beta ionone. It purchased this product worth Rs. 7.6 million in 1971-72 and Rs. 6.3 million worth in the first three quarters of 1972-73.

Exports of beta hydroxy naphthoic acid doubled in the period April December 1972 as compared to the entire preceding year, 1971-72. This was mainly because of the improved offtake of U.S.A. which absorbed these imports valued at nearly Rs. 2 million as against Rs. 0.71 million.

The organic chemicals industry represents a large area of production progress applicable for a wide number of end-uses. Some of the important items of organic chemicals produced in the country are phenol, benzene, nitrobenzene, aniline, ortho para xyline, acetic acid and propylene oxide polyols.

For the production of phenol, there are two factories in the country located in Bombay and Durgapur with an installed capacity of 16,000 tonnes per year of which nearly 10,000 tonnes are actually produced. Imports are negligible for this product; additional capacity is being created and foreign collaboration is allowed on merits.

With a total installed capacity of 94,000 tonnes per annum, the output of benzene in 1972 amounted to about 60,000 tonnes. This product is recovered from coke oven by-product gases from various steel plants in the country and is also being produced from petrochemical operations. Used in the manufacture of plastics, pesticides, dyes, dye-stuffs and drugs this versatile raw material will be more in demand in the years to come. Foreign collaboration would be considered for producing this material also.

As in respect of phenol and benzene, it is felt that further expansion would become necessary to meet the growing domestic demand in respect of nitro benzene, aniline, orthoxylene, and acetic acid.

Polystyrene is a product of recent development in India and is being extensively used in the small scale sector for the production of substantial articles. There is an installed capacity of 175,00 tonnes. While there is no import of polysterene foam, marginal quantity of polystrene is being imported (Rs. 0.62 million worth in 1971-72). Here again, there would be scope for capacity expansion. Presently, the production is based on foreign collaboration which would be considered on merits for further proposals for capacity creation.

REVIVAL IN PLASTIC PRODUCT EXPORTS

After a setback in 1971-72, India's export trade in plastics and linoleums improved during 1972-73. There was a steady export growth until 1970-71 when the trend was interrupted in the subsequent year as the earnings declined to Rs. 63 million from Rs. 87.5 million in 1970-71, the peak year. The lost ground has now been recovered in 1972-73 with an export earning of Rs. 84.30 million.

In the plastics group, the export performance of plastic moulded and extruded goods more than doubled to the level of Rs. 19.8 million in 1972-73 as compared to Rs. 9.2 million in the preceding year. Spectacle frames also witnessed a substantial improvement in their offtake at Rs. 15.3 million as against only Rs. 4 million - a near quadruple rise.

Another area of sizeable export growth was in respect of polyethylene film sheets and bags which secured Rs. 5.2 million as against a little less than Rs. 1 million. Plastic imitation jewellery, plastic electric accessories, laminates, PVC, pipes and conduits were among the other categories of plastic exports that improved their performance. While there were little exports in 1971-72 of GRP manufactures, vacuum formed products, polyethylene rigid and flexible pipes, metallised plastic products, P.V.C. leather cloth, plastic brushes, polyurethane and its products and nitro cellulose cloth, fetched sizeable quantity of foreign exchange in the subsequent year 1972-73. Of these, the export record of PVC leather cloth (Rs. 4 million), metallised plastic products (Rs. 0.5 million), GRP manufactures (Rs. 0.23 million) and polyethylene rigid and flexible pipes (Rs. 0.10 million) was prominent.

There was, however, some decline in 1972-73 as compared to the previous year in the export of fountain pens (Rs. 2.3 million as against Rs. 3.3 million) plastic bangles (Rs. 4.5 million against Rs. 4.7 million) and bags and other PVC fabricated goods (Rs. 1 million against Rs. 1.7 million), PVC sheets (Rs. 2.4 million against Rs. 4.4 million), foam leather cloth and sheetings (Rs. 0.9 million against Rs. 1.14 million).

In the linoleums category, felt based and jute based linoleums, earned Rs. 9.5 million in 1972-73 as against Rs. 7.2 million in 1971-72. Polylined jute exports fell marginally to fetch Rs. 4.64 million as compared to Rs. 5.3 million.

There could not be any export of expanded polysterene in either of the years reviewed owing to the difficulty that freight on this feather-weight material is prohibitive. The declining trend in the offtake of fountain pens and ball point pens was due to the inadequate availability of two raw materials, namely, CAB and stainless steel strips. Overseas demand particularly in the West Asian and African markets for plastic electrical accessories is on rise and thus this item which faced a decline in 1972-73 is certain to improve its export performance to an estimated Rs. 5 million during 1973-74.

The category relating to plastic imitation jewellery has already improved its export. It is reported that these supplies have received encouraging response in Western Europe and the U.S.A. and they are expected to reach the level of Rs. 7.5 million in 1973-74. The major markets in 1972-73 were Saudi Arabia, U. K., U.S.A. Zambia, Malaysia and Malawi which together accounted for Rs. 3.6 million out of Rs. 5.3 million.

In the plastic moulded and extruded goods section, two new items have been added to the export trade in 1972-73. They were PVC gramophone records (Rs. 5.8 million) and PVC boots (Rs. 2 million).

It would be interesting to note here that the production of low density polyethylene was of the order of 30,000 tonnes in 1972-73. The projected output for 1973-74 has been placed at 33,000 tonnes. The production of high density polyethylene which was 20,000 tonnes in 1972 is expected to rise to 23,000 tonnes in the following year. The expected production of PVC by 1973-74 is placed around 43,000 tonnes to 45,000 tonnes. Polypropylenes which are in worldwide shortage now are scheduled for phased production by 1975 to the level of 30,000 tonnes—10,000 tonnes for the fibre industry and 20,000 tonnes for other plastic processors.

Recently, a survey team sponsored by the Plastic and Linoleums Export Promotion Council, Bombay visited some of the countries in Europe and succeeded in booking orders for industrial laminates, PVC, wellington boots and decorative laminates. The value of definite business booked was nearly Rs. 2.3 million. An additional business of about Rs. 8.4 million is likely to materialise by way of supply of these products. There were also firm enquiries worth Rs. 10 million for decorative laminates from Czechoslovakia, Rs. 4 million worth from France for HDPE woven sacks and about Rs. 4 million from U.S.S.R. for the supply of PVC gum boots on a running contract basis.

Another study team sponsored by the Export Promotion Council to Bangladesh has returned with the opinion that there is good scope for plastic raw material exports to that country, as well as for the supply of moulded and processed goods like electrical accessories, imitation jewellery, pipes and fittings, fountain pens and laminates.

RECORD IN COTTON TEXTILE EXPORTS

The export value of cotton textiles from India is reported to have reached a peak level of Rs. 1500 million in 1972 as against Rs. 1100 million in the preceding year. These exports are targetted to fetch Rs. 1750 million in 1973 and Rs. 2000 million in 1974.

While the improvement in foreign exchange earning is a matter of considerable satisfaction, the textile Industry has succeeded in making a sizeable dent in an unconventional market like Japan, the world's traditional leader in textile exports. In 1972, India's exports of textiles to Japan were limited to only Rs. 8.5 million. In 1973 they are expected to secure Rs. 90 million, according to the Cotton Textiles Export Promotion Council, Bombay. In fact, these exports have already reached a level of Rs. 42 million in the first seven months of 1973 (January-July). They include piece goods, yarn, apparel, household linen and hosiery.

OVERSEAS SUPPLY OF PESTICIDES

While during 1971-72, India exported worth Rs. 1.7 million of insecticides, fungicides and disinfectants, foreign exchange nearly of the same order was secured through these exports even during the first three-quarters of 1972-73 (Rs. 1.64 million).

With Hong Kong and Malaysia as the major buyers, the export value of dis-infectants was about Rs. 1.3 million in 1971-72. The total quantum exported was 0.34 million kg. of which Hong Kong absorbed 0.25 million kg. (Rs. 1 million) and Malaysia imported 72,000 kg. (Rs. 0.2 million). United Kingdom and Singapore were among other buyers.

Aside from disinfectants, pesticidal formulations and fumigants figured prominently in the export range. Burma was the principal buyer of pesticides while South Yemen Peoples Republic, Ethiopia and Czechoslovakia are among other customers.

India is one of the largest producers of basic pesticidal chemicals. The country has 19 factories engaged in the production of technical material for pesticides and 37 factories for pesticidal formulations. There are about 110 small scale units additionally to manufacture conventional formulations such as dusting powders and emulsifiable concentrates. The high priority attached to the development of agricultural sector in India has accorded priority status to the pesticides industry in the country.

Among insecticides that are being produced in India in substantial quantities currently, mention can be made of aluminium phosphide, BHC, DDT, malathion and methyl bromide. The major fungicides produced are cuprous oxide, nickel chloride and barium polysulphide. In addition, the pesticides industry covers in its manufacturing range a variety of rodenticides, weedicides and nematocides.

In the organized sector, the country's production of technical material for pesticides stood at 27,700 tonnes in 1972, while that of solid and liquid formulations was nearly 72,000 tonnes in the same year. In terms of value, the output was in the neighbourhood of Rs. 450 million.

The progress of the industry in India is characterised by the manufacture of certain pesticidal material on the basis of imported technical materials. The import bill on this account was nearly Rs. 60 million (1971-72) and in terms of quantity about 5,200 tonnes. The imported material includes endrin, aldrin, phorsate, quinolphos and thiometon.

Domestic consumption of pesticides is expected to increase to nearly 45,000 tonnes in terms of technical material during 1973-74 compared only to 35,000 tonnes in the year that preceded. In the future expansion plans of the industry, stress is laid on manufacture from the basic stage. Foreign collaboration in the pesticidal field is to be allowed on merits.

EXPORT POSITION OF RAW COTTON

Indian Government's policy of unrestricted exports of raw cotton varieties like Bengal deshi, Assam Comilla and yellow pickings for the cotton year 1972-73 (September 1972–August 1973) is to continue for the subsequent cotton year September 1973–August 1974 also.

Raw cotton exports which were of the order of Rs. 186 million in 1971-72 imnproved to over Rs. 200 million even in the first three quarters of 1972-73 (April–December 1972). During 1971-72, the major export variety as heretofore was Bengaldeshi cotton. Japan was the principal buyer. Of the total export value of Bengal deshi in the year at Rs. 166 million (32,125 tonnes), the Japanese intake was as much as Rs. 117 million (22,610 tonnes). Bulgaria was another important market and it purchased worth over Rs. 20 million. U.S.A. (Rs. 7.8 million), Bangladesh (Rs. 7.2 million) and Czechoslovakia (Rs. 5.7 million) were the other markets.

In the non-carded cotton waste group which secured about Rs. 20 million in 1971-72, the offtake of soft waste fetched Rs. 8.5 million, Assam Commillas Rs. 5.9 million and yellow pickings Rs. 5 million.

The U.S. market was the main importer of soft waste while Japan was the principal customer for Assam Commillas and yellow pickings.

While India is an important exporter of short staple cotton varieties to the world markets, it is also a net importer of the longstaple varieties. For 1971-72, the import bill on this account amounted to nearly Rs. 1134 million, mainly from the Arab Republic of Egypt, Sudan and U.S.A.

EXPORT TRADE IN PROCESSED FRUITS AND VEGETABLES

Apart from being a substantial exporter of fresh fruits and nuts to the tune of Rs. 635 million (1971-72), India is also a growing exporter of processed fruits and vegetables. Preserved fruits and fruit preparations fetched Rs. 18.35 million while frozen or simply preserved vegetables secured Rs. 32.7 million and preserved or prepared vegetables earned Rs. 14.8 million in 1971-72. Thus, the preserved fruits and vegetables industry secured an overall export earning of Rs. 65 million in 1971-72.

In the first three quarters of 1972-73 i.e. during April-December 1972, the export value of processed fruits and vegetables other than fresh fruits and nuts as also dried fruits was of the order of nearly Rs. 62 million.

The export range of preserved fruit preparations during the first three quarters of 1972-73 included mango jams and mango juices, preserved fruits with or without sugar, mango slice brines, and fruits preserved in syrups. Of the simply preserved vegetables, potatoes fetched Rs. 1.5 million in the first three quarters of 1972-73. Tomatoes, cabbages, garlic and onions were the other major varieties. Of the vegetables and roots preserved, mushrooms were mainly exported to Switzerland and France to fetch Rs. 3.6 million in the first three quarters of 1972-73. Chutneys and pickles were also active on the export front. Mango pickles alone fetched over Rs. 5 million.

There are 27 factories in India manufacturing processed fruits and vegetables with an installed capacity of 80,000 tonnes per year. Production during the last few years has been at about 25,000 tonnes a year. With the increasing facilities of cold storage, raw material availability has improved lately and the limitations in respect of seasonal operations which have been proving responsible for the limited utilisation of the existing capacity have been minimised. An additional capacity of nearly 40,000 tonnes has been approved by the Government in this field and of this capacity nearly 20,000 tonnes is already under implementation.

It has been estimated by the Directorate General of Technical Development of the Ministry of Industrial Development that the demand for processed fruits and vegetables would be around 100,000 tonnes per year by 1978-79. While the need for expanding production capacity is well known, proposals for foreign collaboration would be considered on merits on the basis of a production programme that would be substantially export oriented.

UNMANUFACTURED TOBACCO FETCHES MORE

India's exports of unmanufactured tobacco fetched Rs. 376.96 million during the first four months of 1973-74 (April–July 1973), registering a sizeable rise over the export value during the corresponding period of the preceding year at Rs. 320.46 million. Quantumwise, nearly 36 million kgs. were supplied abroad as against 39 million kgs. during the respective periods. This indicates that more unit price was realised for the exports effected during the period under review of 1973-74 as compared to the unit price during the corresponding period of the preceding year.

United Kingdom continued to be the leading importer which absorbed 17 million kgs. valued at Rs. 207 million as compared to Rs. 90.31 million (9.20 million kgs.) in the respective periods.

Eastern Europe was the next best importer at Rs. 76.75 million (7.23 million kgs.). U.S.S.R. bought worth Rs. 73.22 million (6.85 million kgs.) as compared to its intake at Rs. 155.44 million (17.98 million kgs.) during the earlier period.

South and South East Asia purchased worth Rs. 66.17 million (8.23 million kgs.) as compared to Rs. 55.38 million (7.50 million kgs). Japan absorbed worth Rs. 47.65 million (4.46 million kgs), followed by Bangladesh at Rs. 17.97 million (3.64 million kgs).

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PRODUCTION PATTERN IN CERAMIC INDUSTRIES

Refractories and insulators are the two major ceramic varieties produced in India. Refractories constitute an essential feeder industry for steel, aluminium and other metal industries as also cement, glass and diverse chemicals. About 75 per cent of the refractory output is consumed by the steel industry itself.

The major types of refractories are fire bricks, high alumina, silica, basic and insulating special varieties. Refractory industry has been growing rapidly in the last decade and a half and has generally synchronised with the growth of the steel industry. In India today most of the types referred to above are being produced except electro-cast high alumina, castables, monoliths, super refractories and specials.

There are 48 factories with an installed capacity of 1.3 million tonnes per year covering various types. A capacity of about 700,000 tonnes accounts for the metallurgical grade, the production of which is confined to a dozen factories and is generally based on foreign collaboration.

Fire bricks, silica and basic varieties are the more generally used. The installed capacity for fire bricks is of the order of 512,000 tonnes of metallurgical grade and 457,000 tonnes of general purpose grade. The capacity for silica and basic varieties is 87,000 tonnes and 98,000 tonnes respectively (metallurgical grade). Actual production of both the metallurgical and general purpose grades of refractories during 1972 was 429,000 tonnes for firebricks, 65,000 tonnes of silica and 90,000 tonnes of basic. In view of the fact that the indigenous production has fallen short of demand, refractory imports are being resorted to and the import value was Rs. 42 million in 1970-71 and Rs. 64.5 million in 1971-72. The agency through which the imports are canalised is the Minerals and Metals Trading Corporation.

It is estimated that by 1978-79, the total demand in India would be of the order of 920,000 tonnes—676,000 tonnes of fireclay refractories, 87,000 tonnes of slilica refractories and 157,000 tonnes of basic refractories. The envisaged production of the existing units by that year is of the order of 927,000 tonnes—705,000 tonnes, 86,000 tonnes and 136,000 tonnes respectively of fireclay, silica and basic varieties.

While further expansion of production capacity in this industry would be allowed by the Government of India, establishment of additional capacity is required to be as far as possible in the vicinity of steel plants. Public Sector is to have a leading role in the context of creating additional capacity. However, expansion of existing factories, diversification and improvement of their quality would be encouraged. Proposals for foreign collaboration are also considered on merits.

Apart from refractories, insulators constitute an important area of the ceramic industry in India. These are special ceramic products used in power generation and distribution. The major insulator items are disc insulators, post insulators, pin insulators and bushings for transformers and switchgears.

There are seven factories in India today manufacturing various types of high tension (H.T.) insulators. They have a total capacity of 21,000 tonnes per year. Annual production amounts to 20,000 tonnes and is based mostly on foreign collaboration. Production of low tension insulators is reserved for small scale sector. H.T. insulators of certain types and of higher voltages are being manufactured indigenously. Imports of such types were 420 tonnes of the value of Rs. 3.5 million during 1969-70 and this figure rose to 580 tonnes at Rs. 4.93 million during 1971-72.

Indian insulators have entered the export markets in a modest way. Their exports ranged between Rs. 0.2 million to Rs. 1 million in the last few years.

In the first three quarters of 1972-73, the export value of electrical insulating equipment amounted to Rs. 2.70 million. The major items of export were porcelain post insulators of varying range supplied mainly to Iraq, porcelain pin insulators exported to Burma, Sri Lanka, Iraq and Malaysia and electric insulating fittings (other than porcelain) principally exported to Kuwait, Afghanistan, Dubai, Kenya and Ghana.

MODERN TELEPHONE EXCHANGE COMMISSIONED

A modern trunk telephone exchange, claimed to be the largest in Asia, has been commissioned recently in Bombay. The cost of the exchange has been estimated at Rs. 5.3 million. The exchange's per day phone handling capacity is of the order of 15000 calls as against the earlier capacity of only 6500 to 7000 calls per day.

The new exchange is equipped with many improved facilities which include accoustic treatment for walls and ceilings for noise reduction; uniform and glarefree illumination for switchboards, air-conditioned halls for equipment and working personnel, provision of conveyor belt system for record and inquiry positions. Besides these, delay indicators for major routes and a centralised control centre for detecting faults and maintenance have also been established in the exchange.

The trunk equipment installed is totally manufactured indigenously and its cost is of the order of over Rs. 2 million. The equipment is supplied by M/s. Indian Telephone Industries (ITI), Dooravaninagar, Bangalore and M/s. Telecom Factory, a public sector undertaking in Bombay.

The heavy pressure on trunk services in the Metropolitan city of Bombay as a result of the growth of industry and trade in the rapidly expanding city has necessitated the establishment of the new trunk telephone exchange.

SPOTLIGHT ON DIESEL ENGINE INDUSTRY

Diesel engines, the prime mover for industrial and agricultural purposes are either stationary engines used alongwith pumping sets, generating sets, compressors or mobile engines used in power tillers, tractors and automobiles and for traction. The requirements of these engines vary from three horse power to tens of thousands of horse power for traction purpose, particularly on ships.

The engines of 3 to 20 HP range, used for pumping sets and power tillers, are produced both in large-scale and small-scale sectors. There are about 24 large and medium scale units and about 320 small scale units. This category of engines account for 90 per cent of the production of diesel engines in India. In 1972 their production in the large scale sector alone was of the order of 70,000 numbers.

The diesel engines within the H.P. range of 20 to 100 are multicylinder, vertical, air and water cooled type engines, mainly used for tractor applications. Automobile manufacturers also have captive capacity for producing the engines required by them in this range. Other applications are in marine, compressor, and power generating sets. There are four major manufacturers who offer these engines for such applications. The annual production of these types of engines is of the order of 10,000 numbers at present.

Currently only one manufacturer of diesel engines meets the needs of earth moving machinery by producing the engines in the range of 100 to 800 H.P. These engines find applications in crawler tractors, dumpers, loaders, shovels, oil-well drilling equipment, compressors, generating sets and trawlers. The installed capacity for the production of these types of engines is 1300 numbers per annum. Two public sector units in India are currently manufacturing diesel engines in the range of 600 to 2600 HP (traction), essentially for application in railways. A public sector unit is now setting up production facilities at Calcutta and Ranchi for the manufacture of marine diesel engines upto 27,500 H.P. These high-powered engines find application in auxiliary, outboard engines on ships and also main propulsion engines for ocean-going vessels.

India made diesel engines have made a significant impact on the world market. Presently, diesel engines upto 30 HP are exported to West Asian, African and South East Asian countries. In 1971-72 the export value of diesel engines supplied was of the order of Rs. 31 million. Diesel engines imports are limited and are confined to very specialised requirements for ocean-going vessels. During 1971-72 the value of such imports was Rs. 7.38 million.

There is sufficient production capacity to meet the requirements of engines in the range of 3 to 20 HP. According to the Ministry of Industrial Development a change of technology towards high speed, light weight engines would be in the right direction. It has been assessed that there would be no need to create a capacity for about 75,000 number of such engines, and this could be achieved by the existing manufacturers by switching over their production to the new type. In the range of 20 to 100 HP, most of the existing firms have their own capacity and there is no scope for additional independent units for this range. An additional capacity for about 20,000 engines could, however, be installed by the existing manufacturers themselves.

There is a clear gap for medium speed marine engines in 75 to 150 HP range. For this, a letter of intent has been recently issued to a unit for the manufacture of marine diesel engines upto 200 H.P.

For the diesel engines required for heavy earth moving machinery there is, at present, one unit and with the demand for earth moving equipment going up, creation of additional capacity for 2000 engines would be necessary. In respect of engines in higher horse power ranges, there is some gap for diesel engines of 800 to 1300 HP, 1600 to 2500 HP and 2600 to 9500 HP. These would find applications in modern shipping vessels, both coastal as well as ocean-going.

Technology is indigenously available for most of the requirements of diesel engines. Proposals for foreign collaboration could, however, be considered for engines of higher horse power and for the production of high speed light weight diesel engines of modern designs, particularly meant for exports.

DREDGING STARTS AT HALDIA

The work for deepening the channel at Haldia Dock near Calcutta has begun. Costing Rs. 160 million, inclusive of Rs. 55.40 million in foreign exchange, the work of dredging is entrusted to M/s. Constain Blankevoort International Dredging Co. and the Dredging Consortium. The initial contract order would be for a year in each case. The Calcutta Port Commissioners could extend it up to 20 and 24 months respectively for the completion of the work.

The oil jetty for handling oil tankers which form part of the Haldia project has already been completed and was commissioned in 1968. The dock system is expected to be commissioned by the middle of the next year.

POWER AUGMENTATION DURING FIFTH PLAN

With an objective of improving installed capacity for power generation to 38 million KW by 1978-79, the Government of India have drawn programmes for implementation. The programmes relate to power generation schemes to the extent of 18.28 million KW.

Out of the schemes identified by the Ministry of Irrigation and Power, those with an installed capacity of about 11.8 million KW are either already under construction or have been authorised for construction. Other schemes with a total installed capacity of 6.5 million KW are awaiting clearance for construction.

EFFLUENT TREATMENT AT BARAUNI

Barauni Refinery in West Bengal has decided to adopt the latest technique in Industrial effluent treatment, meeting the specification just brought out by Indian Standards Institution for the purpose.

After the effluent treatment plant is installed, the oil content in the water discharge would come down as low as 10 pp. (particle per million). It would also effect reduction in the biological oxidation demand, thereby minimising the water pollution hazard.

The treatment plant is to be erected in two phases. The first phase which is expected to be ready by the middle of next year, would reduce the oil content in the Refinery discharge. The second phase would take care of the water pollution by reducing the biological oxidation demand.

The construction of the first phase is estimated to cost Rs. 1.4 million. The work has been entrusted to Messrs Hindustan Construction Company.

INDIA'S FOREIGN EXCHANGE POSITION

India's foreign exchange reserves position is reasonably sound and does not warrant her seeking standby credit from International Monetary Fund at present.

Foreign exchange reserves recorded a rise of Rs. 370 million in 1972-73 and stood at Rs. 8820 million at the end of March 1973. India's trade surplus during the year was Rs. 1850 million.

Any large scale imports of foodgrains is to, however, denude the reserves, especially at a time when the import bill is mounting under the impact of global inflation, the commodities worst hit being crude petroleum and fertilisers.

DISPOSAL OF ATOMIC WASTES

The scientists at Bhabha Atomic Research Centre at Trombay near Bombay have found solution to the problem of disposal of radio-active nuclear wastes which have for long been worrying scientists all over the world. The scientists have developed a process to solidify liquid wastes from atomic reactors and fuel reprocessing plants. The highly radio-active liquid wastes could by this process be turned into less harmful glassy matrices.

The Atomic Energy Department proposes to set up world's first 'Waste Immobilisation Plant' using the process at Tarapur. The plant would be used to dispose of radio-actiue wastes from fuel reprocessing plant being set up at Tarapur for production of plutonium.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

HYDRATOR FOR LIME DESIGNED

Lime, an excellent building material, suffers from the dis-advantage of perishability, being easily contaminated by the atmospheric moisture and carbon dioxide. A method for retaining the useful properties of lime is to first hydrate, as this treatment results in the elimination of extraneous materials. The hydrated lime has been found useful, both as a plastering material as well as for use in mortars. It has definite advantages in having well-defined uniform properties, in case of handling, storage and transport and in the possibility of incorporation into plasters and mortars in exact proportions although it has the demerit of containing about 25 per cent water as an integral constituent. Because of these advantages, the demand for hydrated lime for building construction is increasing. Besides, it has many uses in chemical and other industries. Hence the already existing demand for a suitable machine for carrying out the process of hydrating lime is expected to increase.

The Central Building Research Institute (CBRI), Roorkee, have, therefore, designed, fabricated and commissioned a prototype hydrator which can hydrate about 6 to 7 tons per day of lime of average reactivity.

The hydrator so developed by CBRI is characterised by the presence of many special features. It is a sturdy machine having three tiers and occupying little space. The three tiers have well-defined functions. The first tier acts as the pre-mixer. The hydration mainly takes place in the middle tier. In the third, the hydration is completed and the material is dried. The steam generated during the process of hydration is utilised for pre-heating the incoming water. This results in the acceleration of the process of hydration. The machine permits, through simple manipulation, the alteration of the process in such a manner that the rate of the movement of the material can be changed, so that different periods of contacts can be obtained to suit the nature of the lime. The machine is capable of being transported as one unit and hence it may be possible to carry and use it at the site of actual use. The prototype has been tested in the laboratory and field trials lasting a few weeks have been successfully carried out.

SORBITOL FROM DEXTROSE MONOHYDRATE

National Chemical Laboratory (NCL), Poona, has developed a process for the preparation of 70 per cent sorbitol from dextrose monohydrate. Sorbitol is a basic raw material required in the manufacture of Vitamin C.

The process consists in hydrogenating dextrose monohydrate in solution at a pressure of about 200 PSI. Sorbitol solution thus obtained is deconized, decolorized and concentrated.

Based on the laboratory work, pilot plant trials up to a scale of 75 kg. per batch of dextrose monohydrate have been successfully carried out. The product has been tested by the Hindustan Antibiotics Ltd., Pimpri, Poona, for the production of vitamin C and found to be suitable.

The major raw materials required for the preparation of sorbitol with this process are dextrose monohydrate, raney catalyst, caustic soda and activated carbon. Except raney catalyst, all the raw materials are available indigenously. The plant and equipment required for the process can be indigenously fabricated. It is estimated that for a plant capable of producing 500 tonnes per year of 70 per cent sorbitol, the capital outlay would be only around Rs. 2 million.

NEW TYPE OF LINE VOLTAGE REGULATOR DEVELOPED

The Central Mechanical Engineering Research Institute (CMERI), Durgapur, has recently developed a new type of a line voltage regulator.

The newly developed regulator functions with a motor which rotates an auto-transformer. The primary of a double-wound auxiliary transformer is connected to the output of the auto-transformer. The secondary of this transformer is connected, in series with the load. Thus, when the supply voltage falls below normal, an electrical relay operates to provide proper contact for energizing the motor which then moves the auto-transformer brush in the required direction to compensate the voltage at the load side. Similarly, when the voltage increases, the motor moves in the opposite direction to inject voltage in the load side in the opposite phase. The CMERI unit can supply loads up to 10 kV but the same control unit can be used for any capacity of the regulator.

The capacity of the regulator can be increased only by increasing the rated capacity of the auto-transformer which handles only 20 per cent of the full rated power of the load; it keeps output voltage within 1 per cent of the line voltage. The output voltage can also be set at any value from 100 to 250 V. But this can also be widely changed if the auxiliary transformer is suitably designed to provide different tappings.

The saturable type constant voltage transformer being generally used at present has a major disadvantage that the power at loads should be always above 50 per cent of the rated value of such a transformer, otherwise the constant voltage transformer gets heated up in continuous use and ultimately fails. Another disadvantage is that output voltage wave formed usually gets distorted with reduced load. The third disadvantage is that output voltage cannot be set to other values easily. The newly developed transformer referred to above is designed to overcome these disadvantages.

INDIA'S FOREIGN COLLABORATION POLICY

The Government of India permits foreign collaboration and foreign investments in Indian industries on a selective basis in fields of relatively high priority and in areas where sophisticated foreign technology would become available to the country. An exception to this general policy would be in respect of export oriented schemes.

The Indian Government have notified illustrative lists of industries where (a) foreign investment might be permitted with or without technical collaboration (b) only foreign technical collaboration might be permitted and (c) no foreign collaboration - financial or technical is considered necessary. Foreign collaboration for industries not included in any of the three lists would be considered on merits.

The illustrative list of industries where foreign investment would be permitted includes oil and chemical industries such as fertilisers other than single super-phosphate, selected pesticides, off-shore oil exploration, petro-chemicals, thermo plastics and synthetic rubber; newsprint and speciality papers, rayon and synthetic fibre industries, asbestos and carbon products, fibre board and particle board; industrial machinery such as rayon machinery, certain items of textile machinery like combers, automatic pirn winding and warp winding machines, specialised printed machinery and rubber processing machinery; catalysts and commercial explosives, tea processing machines, electric typewriters, programme control equipment and seamless tubes, electrical engineering industries such as railway electrical signalling, germanium and silicon diodes, transistors and high frequency electrical equipment, LT & H.T. circuit breakers, power cables above 11 kv. and electronic and electro-medical instruments, earth moving equipment and non-ferrous metals.

The illustrative list of industries where only foreign technical collaboration but no foreign investment would be permitted includes special grades of paper and tyre-cord, rubber contraceptives and meteorological baloons, rubber chemicals, alkylamines and such other selected chemical industries, graphite crucibles and midget electrodes, electrical engineering industries such as transformers above 1000 KVA, AC motors above 30 H.P., variable speed motors, electrical lamps and components, power capacitors, lightning arrestors, SC iron castings, alloy iron castings, industrial machinery, including ceramic machinery, food processing machinery, mineral beneficiation plants, printing machinery and specified metallurgical equipment, selected cutting tools, industrial sewing machines, improved type of agricultural machinery, high pressure pipe fittings, formaldehyde chemicals, safety razor blades and safety razors, alloy and special steels and special types of duplicators. This list indicates the fields where foreign investment is not likely to be required for setting up new units. It does not, however, preclude the expansion of existing collaboration ventures.

The list of industries where no foreign collaboration is considered necessary includes common grade of printing, writing, packing, and wrapping paper and boards; rubber goods such as bicycle tyres and tubes, rubber and canvas footwear; conveyor belting, industrial and agricultural hoses and reclaimed rubber, chemical industries such as formaldehyde, acetic acid, chloroform, oxalic acid and beer. Leather and leather goods industries such as vegetable tanning extracts, leather beltings, leather footwear and synthetic tanning materials; viscose filament yarn/staple fibre, viscose tyre yarn, asbestos and carbon products, commercial plywood, matches, sheet glass, vacuum flasks, enamel-ware and container-ware, cement and cement products, sanitaryware, glazed tiles and crockery, grey casting, steel castings, electrical engineering industries including distribution transformers, power transformers up to 1000 KVA, A.C. motors below 30 HP, cables except power cables above 11 kv., winding wires and strips, electric fans, domestic refrigerators, and air conditioners, commercial radio receivers, house service meters, and storage batteries; industrial machinery including sugar machinery, cement machinery, pesticides application equipment, poultry equipment; milk and dairy machinery, tea processing machinery, oil mill machinery, rice mill machinery, railway wagons, railway mechanical and signalling equipment, bright bars, transmission line towers and structurals and other industries such as collapsible tubes, domestic utensils, oil pressure stoves and lamps, pressure cookers, domestic sewing machines, cigarette lighters, bicycles and parts, solvent extraction of oil cakes and synthetic detergents.

Wherever foreign equipment and investment is considered essential, the policy is to allow minority foreign participation, preferably less than 40 per cent but in exceptional cases, majority participation might be considered if the project requires sophisticated technology or is substantially export oriented.

Technical collaboration is considered preferably on the basis of recurring royalty payments which are taxable. The percentage of royalty depends on the nature of the technology but does not ordinarily exceed 5 per cent (taxable). Royalty is calculated on the basis

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of ex-factory selling price of the product minus the landed cost of imported components. In addition to recurring royalty, the suitable lump sum payments are also to b considered in deserving cases for the import of drawings, and documentation. Collaboration agreements are approved normally for a period of five years either from the date of agreement or from the commencement of production provided production is not delayed for a period of three years from the signing of the agreement.

Foreign collaboration or investment would be considered in low priority or non-essential industries if the applicant is prepared to undertake guaranteed exports of a major portion of production and the prospects of such exports are considered reasonable.

Further details of the Indian Government's foreign collaboration policy can be obtained from the Indian Investment Centre, Parliament Street, New Delhi or its branch offices in New York, London and Duesseldorf. ☐

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GLOBAL TENDER WON FROM IRAN

A global tender of a sizeable value of U.S. $ 2.1 million for the supply of about 14,500 tonnes of refractories has been recently won by an Indian firm from Iran. It is claimed to be one of the biggest advertised tenders which India has won next to railway wagons.

The Indian party, M/s. Orissa Industries Ltd., Rourkela, has secured the tender from M/s. National Iranian Steel Mills. The contract between the two parties has been signed recently according to the information received from the Indian Embassy in Tehran.

The National Iranian Steel Mills, a Government organisation, is stated to be poised for expanding activities and India is likely to get more business based on her performance in regard to this tender, it is learnt.

Refractories constitute an important segment of ceramic production in India. With 48 refractories active in the field, the industry has an installed capacity of 1.3 million tonnes per annum covering various types, such as, fire bricks, high alumina, silica, basic and insulating special varieties.

India's export trade of ceramic products amounted to about Rs. 3 million in 1971-72. In the export range are included ceramic, sanitary and combing fixtures as also bricks, tiles and pipes. The leading customers for Indian ceramics have been Kenya, Mauritius, Sudan, Uganda, Nepal, Sri Lanka, Muscat and Saudi Arabia.

INDIAN EXPLOSIVES TO WORLD MARKETS

Overseas demand for Indian explosives has been on rise. Over Rs. 2.5 million worth of foreign exchange was secured through these exports in the first three quarters, of 1972-73 while in 1971-72 the export value was about Rs. 2.2 million. Propellant powders and other explosives fetched over Rs. 0.5 million in the period reviewed in 1972-73 as against Rs. 0.4 million in the entire preceding year. The category of fuses, primers and detonators has secured Rs. 1.93 million in the first three quarters of 1972-73 as against Rs. 1.68 million in 1971-72. In this section, detonating fuses, safety fuses, detonators containing electrically ignited explosives and non-ordance plain detonators are the few specific products supplied abroad.

While Bahrein Islands, Jordan, and Kuwait constitute the prime buyers of industrial explosives, Singapore, Burma, Sri Lanka, Jordan and Iran are the leading buyers of detonators and safety fuses.

There are two recognised manufacturers each for blasting explosives, safety fuses and detonators (1971). The installed capacity for blasting explosives in that year was about 47,000 tonnes while that of safety fuses was over 14 million coils and detonators 168 million numbers. The actual output was 32,320 tonnes, 81 million coils and 107 million numbers respectively for these products. For detonating fuses the installed capacity of a single firm was of the order of 9 million metres while actual output was nearly 6 million metres.

M/s. Indian Explosives Limited is an important manufacturer of commercial blasting explosives, safety military - detonating fuses, military - powder and detonators. In the year ended September 1972, the company's production was 31,327 tonnes of blasting furnances, 79 million metres of safety military and detonating fuses and 43 million units of military powder. The company which has a manufacturing plant for explosives in Bihar and another for urea and intermediate products in Kanpur has succeeded in improving its export performance to the order of Rs. 2.1 million in the year under review as against Rs. 0.3 million in the preceding year. The company's exports are mainly in the direction of West Asia. It has succeeded in developing a good range of new products - both explosives and accessories to meet the specific requirements of the export markets.

The company also has 1,000 tonnes per year nitrocellulose plant, the construction of which is in progress. It is expected to go on production stream by mid-1974 and its full output will save foreign exchange of about Rs. 7.5 million a year. Its fertilizer plant in Kanpur is already producing over 80 per cent of the designed annual capacity (373,500 tonnes of urea).

Industrial explosives are included in the priority list of industries in India. Under the current industrial licensing policy, the industry has a scope for additional capacity creation. Foreign collaboration is also permitted. Excepting sodium nitrate and sulphur, other major raw materials such as ammonium nitrate, nitric acid, sulphuric acid, glycerine toluene, nitro cellulose and aluminium powder are all available from indigenous sources.

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GRAMOPHONE RECORDS ACTIVE IN EXPORT TRADE

Overseas supply of gramophone records during 1971-72 secured foreign exchange at a value of Rs. 5.06 million. In terms of quantity, nearly 780,000 records were supplied overseas. During the first three quarters of the following year (April-December 1972), the exports amounted to Rs. 4.38 miilion. About 565,500 records were supplied.

During 1971-72, Singapore constituted the leading buyer having bought worth Rs. 0.87 million (138,655 numbers), followed by U.K. at Rs. 0.85 million (140,880 numbers), U.S.A. at Rs. 0.72 million (70,542 numbers) and Yugoslavia at Rs. 0.50 million (98,965 numbers). Czechoslovakia, Trinidad, Kenya, Guyana, Fiji Islands and Hungary were prominent among other buyers.

Czechoslovakia emerged as a major importer during the first three quarters of 1972-73, having purchased worth Rs. 0.84 million (96,769 numbers). U.K., the next best importing country bought worth Rs. 0.75 million (105,048 numbers), followed by Singapore at Rs. 0.42 million, U.S.A. at Rs. 0.31 million, Hungary at Rs. 0.30 million, Yugoslavia at Rs. 0.27 million and Trinidad at Rs. 0.23 million. Among other buyers, Dubai, Fiji Islands and Kenya were significant.

Contributing to the export effort of sound recording sector of the musical instrument industry, M/s. Gramophone Company of India Limited, 33, Jessore Road, Dum Dum, Calcutta-28, exported gramophone records and other equipment worth Rs. 5.20 million during the year ended June 1972. Their records especially on Indian classical music, folk music as well as motion picture music have invoked growing interest among overseas listeners. They have on their export list a large number of overseas markets in East Africa, West Asia and Europe. Their export range includes radios, record players and stereo amplifiers also. Lately, they received encouraging enquiries for their products from Scandinavian countries.

The Calcutta firm's records are popular under the brand name 'HMV' (His Master's Voice). The firm started the manufacture of records and gramophones as early as 1907. Aside from gramophones and gramophone records, their diversified range of products includes radio receivers, radiograms, record players, record producers, pick-up cartridges and components.

Their production during the year under review was of the order of 6.78 million numbers of gramophone records, 28,531 radios/radiograms and 56,348 record players and record reproducers. They have recently received an industrial licence to manufacture 350,000 numbers of pick up cartridges and 300,000 numbers of stylus per annum. Their work under this project is in progress.

India's total production of record players and reproducers - the new export item of the Calcutta company - is in the neighbourhood of 75,000 numbers per year. The country's output of radio receivers is about 2 million numbers.

BOOST IN MARINE PRODUCT SUPPLIES

While several exporters are engaged in marine products trade, M/s. Esmario Export Enterprises, Kavanad, Quilon, Kerala, have a distinct story of export success. They have been chosen recently for the award for their proven export performance. During 1972-73, the foreign exchange earning of the firm touched a record level of Rs. 18 million. In fact, their exports rose to this level from only Rs. 9 million in 1968. They hope to cross the Rs. 25 million mark in 1973-74; even in the first four months of the year their actual exports netted Rs. 10 million. On hand, the firm has orders for the supply of 80,000 kgs. of fish to Japan and 50,000 kgs. to U.S.A.

Of the firm's total exports during 1972-73, Japan imported 0.65 million kgs. at a cost of Rs. 14.40 million while U.S.A. bought Rs. 0 26 million kgs. valued at Rs. 3.87 million. In the preceding year, their purchases were of the order of Rs. 15.58 million (0.71 million kgs.) and Rs. 2.20 million (0.14 million kgs.) respectively. Although presently the firm's exports ore confined to Japan and U.S.A., they are soon to introduce their products in European and Australian markets.

During the short span of their operation, M/s. Esmario have expanded sizeably. Today the firm is having a complete range of plants and equipment comprising ice plants, cold storage plant, frozen storage plant, contact plate freezers, medium sized fishing trawlers and deep sea fishing trawlers. Recently, they have acquired two new trawlers form Mexico which are equipped with most modern fishing equipment, cold storage and freezing facilities capable of operating upto 150 fathoms.

In their move for expansion, M/s. Esmario have a number of achievements to their credit. Recently, they initiated setting up of a new firm, M/s. Andhra Marine Exports Private Limited at Hyderabad for deep sea fishing and processing operations on the east coast. Their work on the Vizag. plant is going apace and shore installations are expected to be completed by March 1974. They have active plans to build six trawlers indigenously, in addition to an equal number of trawlers to be imported from abroad. The Vizag. plant is expected to be one of the most modern sea food processing units in the country with facilities for deep freezing, canning, filtering and fish meal production. After completion, the plant is expected to earn foreign exchange to the tune of Rs. 40 million per annum. Their expansion plans also include additional cold storage freezing capacity and canning capacity during 1973-74 to achieve an annual export turnover estimated at Rs. 30 million. Aside from this, they are soon to undertake canning of shrimps and fish for domestic and overseas consumption.

India's total exports in marine products reached an all time high record of Rs. 597 million during 1972-73, as against Rs. 445.5 million in 1971-72. In terms of quantity, 38,903 tonnes were supplied abroad as against 35,523 tonnes. The export achievement during 1972-73 thus indicates a growth rate of over 34 per cent in terms of value and 9.5 per cent in terms of quantity.

Frozen shrimps continued to be the largest single item of sizeable export growth. It secured the bulk of foreign exchange valued at Rs. 507.10 million as compared to Rs. 371 million in the preceding year (1971-72). Japan continued to be the biggest buyer for this item, followed by U.S.A., Australia and West European markets such as, Sweden, Denmark, France, U.K. and Netherlands.

Frozen froglegs was the next best item of export which secured Rs. 29 million as against Rs. 12.80 million. U.S.A. was the principal importer, followed by France, Belgium and Netherlands. Canned shrimps, yet another item of export expansion, earned as much as Rs. 32.50 million as compared to Rs. 25.20 million. U.K., France, U.S.A. and Federal Republic of Germany were the prominent customers. Canned prawns, shark fins and fish maws, frozen lobster tails and frozen fish were the other items of export.

CASHEW KERNELS IN EXPORT TRADE

M/s. Pierce Leslie India Ltd., Old Court Road, Calicut (Kerala), has been in the export line for nearly half a century and was lately awarded a certificate of merit for its outstanding export performance during 1969-70. In 1972-73, the firm was able to export cashew kernels worth Rs. 35 million. Valued at Rs. 39.43 million, their export performance was, in fact, better in the preceding year.

During 1972-73, the firm sold Rs. 13.30 million worth of cashew kernels to U.K. and other West European countries who topped the list of its customers. U.S.A. and Canada whose purchases totalled Rs. 10 million constituted the next best markets. U.S.S.R., Japan, Czechoslovakia Australia, New Zealand, Lebanon, Hungary, Singapore and Kuwait were the other destinations for export supplies effected by the firm.

Apart from cashew kernels, M/s. Peirce Leslie India Ltd. are exporting cashew nut shell liquid, particulary to U.K., Japan and France. Their foreign exchange earning on this account was of the order of Rs. 2.13 million in 1972-73 and Rs. 2 million in 1971-72.

Initially set up in 1862, the firm is now operating as a public company since 1969, with branches at Tellichery, Coimbatore and Mangalore. Additionally, it has a network of agency arrangements, functioning in U.S.A., Canada, U.K. and certain other West European countries, Japan, Australia and New Zealand. More than 90 per cent of their products find their way overseas. The firm owes its success to the high quality of their products and strict adherence to delivery schedule. Their installed capacity for roasting cashew kernels is of the order of about 18,600 tonnes.

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India's exports of cashew kernels totalled Rs. 685.30 million (65,950 tonnes) during 1972-73, while her earning through overseas supply of cashew nut shell liquid in the year amounted to Rs. 5.75 million.

EXPORT PERFORMANCE AND POTENTIAL

NEW HIGH IN SILK AND RAYON TEXTILE EXPORTS

Registering an improvement of over 130 per cent, India's export trade in silk and rayon textiles is reported to have touched Rs. 88 million in the five - month period - April-August, 1973 - as against Rs. 38.20 million in the same period of 1972. The major product group which was responsible to have brought in this thrust forward relates to fabrics which represented over three-fourths of the total trade in the period under review. The rest of export comprises garments and made-up items, hosiery, knitwear and rayon tyre yarn.

The fabrics group earned as much as Rs. 65.4 million as compared to Rs. 32 million in the previous period. The silk and rayon fabric exporters have set for themselves an export target of Rs. 155 million for the entire year 1973-74. For the non-fabric varieties export, the export traget has been placed at Rs. 25 million. A goal of Rs. 180 million is thus sought to be achieved by the industry during the year.

Filament rayon fabrics constitute the major item of the fabrics export trade. There are certain favourable factors which assume rising export markets for the item. Indigenous yarn production is sizeable. There is a large sector of the weaving and processing industry in India, which is rayon fabrics oriented. Also financial investment is lower in the rayon sector as compared to synthetics and hence the decentralised structure of the weaving industry is encouraged. Besides, the advanced manufacturing countries have gradually withdrawn from this field and a large demand in the world markets awaits Indian supplies. For the filament rayon fabrics export alone, an export target of Rs. 200 million has been fixed by the year 1978-79.

The spun rayon fabrics also have a large export potential. Bulk of the trade expansion is expected in the directon of Europe and North America.

Polyester-Viscose and Polyester-Cotton blended fabrics have also come to occupy an important place in the world trade of man-mades. With the commissioning of the new polyester fibre producing units, India's production base for these fabrics has started looking up.

In the nylon fabrics group, it is hoped that good scope can be built for the export trade of specific items like tafetta, georgette and shirtings. In addition to the fabrics group, hosiery knitwear and garment groups of industries are also strengthening themselves in the export effort in view of the rapidly rising world demand for them.

There are, however, certain international developments which are likely to affect Indian trade in silk and rayon textiles. Exports of cotton textiles to the European Economic Community and the U.S.A. are, as is well known, regulated by a Long Term Arrangement. This arrangement is due to expire by the end of September 1973. Further extension of the Arrangement is not being made possible due to the differences among the negotiating countries on the question of converting the Long Term Arrangement into a Multi–Fibre-Multi-Lateral Textile Agreement. Such a conversion is intended to regulate exports of all kinds of textiles including man-made fibre fabrics from the developing to developed countries. Unfortunately, however, these countries which have already developed a large trade in the non-textile group are likely to get a larger share of the quotas that might be fixed under the new arrangement. This would adversely hit countries like India which are new entrants in the field. It is reasonable that such new entrants receive special attention.

INDO-TURKISH TRADE AGREEMENT

Commercial ties between India and Turkey were placed on a firmer footing through the first ever Trade Agreement between the two countries signed recently which imparts new dimensions to the trade between them. It contemplates the availability of maximum possible facilities towards the promotion of trade. It envisages participation in trade fairs/exhibitions, exchange of visits of businessmen and trade delegations and the evolution of a relationship between the trading organisations of the two countries.

The Agreement which was signed by Prof. D. P. Chattopadhyaya, India's Minister of Commerce and Mr. Ahmet Turkel, Minister of Trade of Turkey, provides that the trade between the two countries would be in convertible currencies.

Two indicative lists of items available for export from India to Turkey and Turkey to India are appended to the Agreement. Some of the items identified for export from India are coffee beans (raw), essential oils, iron scrap, pig iron, manufactures of copper, handtools, small tools, internal combustion diesel engines and semi-diesel engines, scientific and laboratory equipment, paper, paper board and manufactures thereof, spare parts of textile machinery, typewriters, calculating machines and data processing machines, electrical machinery, surgical and medical instruments, ignition equipment, electrical spares, machine tools, communication equipment, traffic light and signalling equipment, marine diesel engines, spare parts for motor vehicles, transport equipment and parts, ferro-manganese, motion pictures, jute goods, spices, natural gums, iron and steel products. Some of the main items which India could import from Turkey are minerals (mercury and boracite), agricultural products, machinery and industrial goods.

The Agreement contemplates the setting up of a Joint Committee comprising of the representatives of the two Governments. This Committee will meet once a year to facilitate the implementation of the provisions of the Agreement and to solve any problems which may arise from time to time in promoting trade between the two countries.

During 1972-73, India's exports to Turkey totalled Rs. 47.70 million (April–December), while imports from Turkey were Rs. 1.2 million. In 1971-72 and 1970-71, Indias' exports to Turkey were of the order of Rs. 20 million and about Rs. 3.00 million respectively. Her imports from Turkey during these years amounted to about Rs. 1.50 million and Rs. 7 million.

OVERSEAS OPERATIONS OF HINDUSTAN MACHINE TOOLS

The State-owned Hindustan Machine Tools has plans to step up its overseas operations. Indian Government's approval has been obtained for establishing HMT's own base near Luxembourg at a cost of Rs. 1.5 million, Rs. 0.9 million of which will be in foreign exchange.

The machine tools received from India for European customers would be fitted with required accessories and controls including numberical controls at the Luxembourg base before delivery to buyers. The project is expected to be completed by 1974-75.

A chain of agents for sale of HMT machines and tools has already been created in Australia, U.S.A., U.K., Netherlands, Denmark, A.R.E., West Germany, Belgium, Malaysia, Philippines, Sri Lanka and Nigeria. Agents had also been appointed in Japan, South Korea and Nepal.

Overseas economies have sought HMT's consultancy services in setting up machine tool industry. A feasibility report has been recently submitted by HMT to a Philippines firm for setting up a machine tool plant. The proposed unit will initially take up manufacture of lathes and later expand to produce variety of other machine tools.

In the next five to ten years, the enterprise's aggregate annual sales are expected to touch Rs. 1000 million covering watches, tractors, printing machines and the widest possible range of machine tools.

HMT has laid firm foundations of design capability for machine tools in India. It has on its rolls 400 machine tool designers who rank among the world's best.

Even a British machine tool firm thought it fit to seek on royalty basis the HMT developed technical know-how for the manufacture of mini chuckers.

A team of HMT engineers in collaboration with the Central Machine Tool Institute and American Tool (Inc.) of Cincinnati had jointly developed a modern version of lathe-first in the new series of lathes for international markets. The prototypes of machines are undergoing tests both at CMTI, Bangalore, and at Cincinnati. The lathe has features, acceptable both to European and American markets, and fills in the missing link in India for modern heavy duty lathes.

HMT engineers had also just completed together with a British firm of Brighton design and construction of a numerically controlled lathe which had been shipped to Britain for extensive trials. They are also engaged in designing machining centres with numerical controls jointly with British engineers. Further in collaboration with CMTI and M/s. Bharat Electronics, HMT engineers are evolving designs of a numerically controlled system for machine tools.

HMT has been assigned the task of developing 28 machine tools out of 50 important types identified by the National Committee for Science and Technology which is now drawing up a comprehensive plan for achieving self-sufficiency.

HMT has also made substantial contribution to the country's defence effort. In fact, between 20 to 30 per cent of machine tools that it produces, particularly the more sophisticated ones, are intended for ordnance and defence factories.

INDO-EUROPEAN ECONOMIC CO-OPERATION

"The concept of a third world comprising of poor countries is obsolete and outdated... While the people of India may be largely poor, India is rich in human skill, in natural resources, and in its unique approach towards the problems of life, stated India's Ambassador to the European Economic Community, Dr. K. B. Lall, in a recent address to the European Parliament's Committee on Development and Cooperation. Co-operation between Europe and India should take the form of "marrying Europe's riches in technology, finance and commerce, with India's untapped assets, so that the inadequacies of the two entities could be rectified and the two together could join in a common endeavour to promote an international equilibrium based on global growth with social justice".

It would be expected of Europe in the concluding months of 1973 to make its voice heard in world affairs and to make its original contribution for the promotion of a better international equilibrium Dr. Lall stated.

While appreciating EEC's interest in Africa, the Indian Ambassador said that India also has a stake in Africa's progress and prosperity, in-as-much as Africa is India's neighbour. Africa, like Europe, should in its own interest remain open to the world; equally Europe and Asia should develop a similar interest in each other.

In another address to the British Delegation to the European Parliament, Dr. Lall declared that a new equilibrium had emerged on the Indian sub - continent between the forces of secularism and democracy and those of bigotry and militarism. The new environment is expected to enable the peoples of India, Pakistan and Bangladesh to concentrate their energies on economic development and social progress.

He further stated that the Indo - U. K. Trade Agreement of 1939 which was originally conceived as an effort to sustain the mercantile system, provided in recent years an essential ingredient for a mutually beneficial system of relationship between developed and developing countries.

"It was the Indo-British experience that paved the way for the General Scheme of Preferences in favour of the products of developing countries".

The Indian Ambassador wondered by what stretch of imagination, anything in Indo-British commercial relationships could prove detrimental to the interests of the member state of the EEC. The article 39 of the Treaty of Accession might create problems for Indian exports to the U.K. But in the joint declaration of intent, the British Government together with the Community made a commitment to extend and strengthen trade relations and to find appropriate solutions for these problems.

Indian exports to the U.K., provided complementary support to the British economy, and the further development of Indo-British contacts could only be a factor of strength for Britain, the Community and India. The opportunity provided by U.K.'s accession to the Community could be well used for developing a system of complementary relationship based on equity, comparative advantage and mutual benefit between Western Europe and the developing world.

DECLARATION OF DEVELOPING COUNTRIES

The recent Ministerial meeting in Tokyo which was held under the auspices of the General Agreement on Tariffs and Trade has adopted a Declaration which marks the formal launching of a new round of International Trade Negotiations under GATT.

The Negotiations would aim to achieve expansion and ever greater liberalisation of world trade and improvement in the well being and welfare of the people's of the world.

These are the objectives which can be achieved, among other things, through progressive dismantling of obstacles to trade and improvement of international framework for conduct of world trade.

The Negotiations shall be conducted on the basis of principles of mutual advantage, mutual commitment and overall reciprocity while observing the most favoured nation clause consistent to provisions of general agreement relating to such negotiations.

'Developed countries do not expect reciprocity for commitments made by them in negotiations to reduce or remove tariff and other barriers to the trade of developing countries. "That is to say developed countries, do not expect developing countries in course of trade negotations to make contributions which are inconsistent with their individual development and financial and trade needs."

The Ministers recognised the need for special measures to be taken in the negotiations to assis developing countries to increase their export earnings and promote their economic development and for priority attention to be given to the products or areas of interest to developing countries.

They recognised the importance of maintaining and improving the Generalised System of Preferences (GSP). They further recognised the importance of differential measures to developing countries in ways which would provide special and more favourable treatment for them in the areas of negotiation where this is feasible and appropriate.

The Ministers also recognised that the particular situation and problems of least developed among developing countries should be given special attention and stressed the need to ensure that these countries receive special treatment in the context of any general or specific measures taken in favour of developing countries during the Negotiations.

The policy of liberalising world trade cannot be carried out successfully in the absence of parallel efforts to set up monetary system which shields the world economy from shocks and imbalances which have previously occured. Efforts which are to be made in the trade field would imply continuing efforts to maintain orderly condition and to establish durable and equitable monetary system.

EXPORT UPTREND IN GROUNDNUT EXTRACTIONS

India's exports of groundnut extractions during 1972 yielded an all-time record value of Rs. 564.7 million including Rs. 235.6 million in foreign exchange. The exports could have yielded Rs. 1000 million in the year, according to the Groundnut Extractions Export Development Association, through which exports are canalised.

In its Annual Report, the Association has stated that India has continued to occupy the position of sole supplier of groundnut extractions to Japan. Exports to Japan in 1972 amounted to over 138,000 tonnes valued at over Rs. 90 million.

It is also reported that there has been a revival of the U.K. market and breakthrough in West Europe. Exports to U.K. amounted to 130,500 tonnes valued at Rs. 85.2 million as compared to 87,600 tonnes worth Rs. 46.4 million in 1971.

This revival can be attributed to a large extent to independent freight agreements made by exporters and importers free from the liner service of shipping conferences on which the trade used to depend for the past several years.

It is further reported that substantial quantities were exported to Federal Republic of Germany, Netherlands, and France, as a result of aggressive marketing by the Indian exporters.

Exports in 1972 at 855,000 tonnes had been marginally less than the quantity exported in 1971 but the value realised was at a record level of Rs. 565 million against Rs. 489 million in the previous year.

EXPORT POTENTIAL TO SOUTH EAST ASIA

India envisages a sixteen per cent increase annually during the next three years in her exports to South East Asian countries, including Japan and Australia. This assessment has been made at a recent meeting of the Indian Commercial Secretaries stationed in that region. The meeting was presided over by India's Commerce Minister, Prof. D.P. Chattopadhyaya.

The meeting reviewed India's trade policy and scrutinised all possible avenues to increase exports. It found that 'tremendous potentialities existed for increase in exports to the region'.

The meeting decided to revise the present policy on Trade Fairs. Since India has been taking part in many Trade Fairs, Prof. Chattopadhyaya said that a new authority would soon be established to be exclusively responsible for all Fairs.

The Indian Government had decided to take advantage of liberal trade policy adopted by developing countries like Japan and Australia, the Minister said.

The meeting found excellent opportunities for Indian entrepreneurs for joint ventures in the region.

At present fifty-two approved joint ventures are in various stages of implementation, while about a dozen have already gone into production.

READYMADE GARMENTS EXPORTS

Nearly three million Indian garments are at present being exported every month, those of cotton alone accounting for 2.5 million pieces earning Rs. 36 million.

The President of Clothing Manufacturers Association of India has recently stated that the export of Indian garments had almost doubled as sales this year expected a return of Rs. 450 million as compared to Rs. 250 million last year.

Scandinavian countries have proved to be the best buyers of Indian garments, followed by U.S.A. and U.S.S.R.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

A SKETCH ON LEATHER FOOTWEAR INDUSTRY

An important labour intensive and export oriented industry, leather footwear is mainly in the cottage and small scale sector of India accounting for about 140 million pairs per annum. In the large scale sector, the installed capacity is over 23 million pairs per year and actual production is around 15 million pairs. An additional capacity of 3 million pairs has been approved in the organised sector and this is likely to be implemented within a few years.

Leather footwear has emerged as an important foreign exchange earner. In 1971-72, the export value was Rs. 86 million (7.4 million pairs) of which leather close toe footwear fetched as much as Rs. 38.3 million in the year (1.68 million pairs). U.S.S.R. was the leading market having absorbed nearly a million pairs at a value of Rs. 31 million. The U.S. market imported worth Rs. 1.9 million while Nepal and Canada were among 56 other markets. All leather open toe footwear is an equally important line of export and its foreign exchange value in 1971-72 was nearly Rs. 30 million (3.5

million pairs). U.S.A. was the principal importer of this variety of footwear having absorbed over 2 million pairs at a value of nearly Rs. 17 million. Australia purchased worth Rs. 3.6 million, Canada Rs. 1.2 million worth, U.K. Rs. 1.3 million and U.S.S.R. Rs. 1.7 million. Other varieties of leather soled footwear fetched Rs. 2.5 million in the same year.

Rubber soled upper leather footwear is yet another line of export expansion. It has earned foreign exchange worth Rs. 1.5 million in 1971-72, mainly from supplies to U.S.A. (Rs. 5.6 million), U.K. (Rs. 3.4 million), Canada (Rs. 1.6 million) and Australia (nearly Rs. 1 million).

An examination of the future prospects of the industry in the country would reveal that even considering the large scale sector alone, the domestic demand is expected to increase to nearly 50 million pairs per year which would correspond to an installed capacity of nearly 63 million pairs. While this is the rough estimate of the Directorate General of Technical Development in the Ministry of Industrial Development, it would be difficult to quantify the extent of demand growth for the footwear industry which has not only a domestic consumption angle but has an increasing export potential too. It is, however, certain that this industry awaits large scale expansion in the near future.

Development of additional capacity in the footwear industry has been reserved for the small scale sector except for cases of expansion and establishment of new units for export markets.

From the point of view of technical progress, the Central Leather Research Institute (Madras), under the aegis of the Council of Scientific and Industrial Research (CSIR), has engaged itself in effective research and development activities for bringing out improvements in leather processing and finishing as also providing technical assistance to the leather industry.

With a view to getting abreast of the dressing-oriented fashion changes in leather footwear, the Government of India is prepared to consider proposals for foreign collaboration in the context of fresh capacity creation for production provided the production is pre-dominantly export-oriented.

FACTS ON MINERAL OIL

India produces about 8 million tonnes of crude oil a year as against its requirement of 20 million tonnes The country's refining capacity is 20 million tonnes of which 11.75 million tonnes is in the public sector.

Under the Government's Industrial Policy, development of mineral oil has been the responsibility of the State. In 1956 was set up the Oil and Natural Gas Commission (ONGC) to explore oil in the country. This was followed by the discovery and production of crude oil in commercial quantities in Assam, Gujarat and other States. The ONGC extended its activity to the Persian Gulf in collaboration with an Italian and an American concern in finding offshore oil. It was established that from the proved reserves of Gujarat and Assam, about 6.75 million tonnes of crude oil and 2 to 3 million cubic metres a day of natural gas could be produced. Then followed the setting up of other companies like Oil India, followed by the formation in 1964 of Indian Oil Corporation which integrated refining and marketing of oil.

The ONGC is engaged in carrying out geological and geophysical surveys besides drilling operations in Gujarat, Assam, Tripura, Rajasthan, the Cauvery Basin and Jammu and Kashmir. Since its inception, the Commission has completed works for 991 oil wells. Simultaneously, it has been engaged in oil production which rose to about 11,400 tonnes a day at the end of 1972. Total production of crude oil from Assam and Gujarat was of the order of 2.75 million tonnes during April to November, 1972.

Since its inception the ONGC has produced and sold 25.87 million tonnes of crude oil. It is now securing, from a Japanese firm, a self-elevating, self-propelled and mobile drilling platform. Offshore drilling in the Arabian Sea adjoining the Gulf of Cambay will start when the platform is set to work.

The Commission's subsidiary, the Hydro-carbons India, holding one-sixth share in a major company, called the Iranian Marine International Oil Company, is operating in the Persian Waters of the Gulf. Oil India Limited is maintaining production of crude to meet the requirements of the public sector refineries at Gauhati and Barauni and partly of the Assam Oil Company refinery at Digboi.

It is envisaged that during the next five years, 1.33 million metres of drilling would be undertaken on shore and the number of rigs would gradually go up from the present 32 to 54.

The supply position of crude oil will improve when, with Iranian participation, the Madras refinery is expanded. This is expected to be all the more satisfactory as the ONGC's programme during 1974-75 to 1978-79 promises production of 34.12 million tonnes. The achievement of this target would mean almost 100 per cent increase in the rate of production by the ONGC. Oil India's present production of 3 million tonnes would also go up when its seven year expansion plan costing more than Rs. 180 million comes off.

On the refining side, the existing 20 million tonne oil refining capacity of the country is to be augmented through expansion of the capacity of the refineries at Barauni, Cochin and Koyali. New refineries are also being set up at Haldia, Bongaigaon and Mathura. During 1972, the five public sector refineries processed crude oil to the extent of 11.84 million tonnes exceeding the target for the year at 11.75 million tonnes.

SMALL SECTOR OUTPUT DOUBLES IN SIX YEARS

India's small scale sector has achieved spectacular progress over the past six years. The sector produced goods worth over Rs. 58,000 million in 1972 as against Rs. 29,540 million in 1966 leading to an increase of nearly 100 per cent. In 1971, the value of output had touched Rs. 48,600 million.

The number of registered small scale units has exceeded 300,000 as against 120,000 six years ago

ORTHO-XYLENES ON PRODUCTION STREAM

Ortho-xylenes and mixed xylenes which were hitherto being procured through imports to meet domestic demand are now not only available in India, but arrangements are also being made to export surplus production. The import bill for xylenes amounted to Rs. 4.55 million in 1971-72. In terms of quantity more than 7 million kgs. were imported in the year.

The Indian Petrochemicals Corporation, Baroda who have taken up the manufacture of xylenes have released the first consignment of the product for the home market. Creditably, the ortho-xylene project, built at a cost of Rs. 280 million, has 75 per cent of its machinery from indigenous sources. With the commissioning of the ortho-xylene unit, two of the three units of the Gujarat Aromatics Projects have gone on stream while the one related to para-xylene unit is also expected to begin production very shortly.

Ortho-xylene is mainly used in the manufacture of pthalic anhydride which is used for manufacturing plastics, while the mixed xylenes function as solvents in the production of paints and pesticides.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

SUBSTITUTE FOR BAKELITE FROM SAW DUST

The Regional Research Laboratory, Jorhat, has developed a process for making moulding powder and moulded products which could serve as a substitute for conventional products like bakelite. The major raw material for the process could be saw dust and such other agro-industrial ligno-cellulosic waste material. The new process eliminates the use of phenol-formaldehyde resin.

Aside from agro-wastes, the other raw materials required would include phenol, commercial grade acids, hexamine and stearates. All these materials are available indigenously. The total cost of the product would be far less than in the conventional process.

The product involves powdering raw material and blending it with the requisite amounts of chemicals. Phenol is to be sprayed on the material which would subsequently be washed, neutralised and compounded with hardening agents before a final mould emerges.

Also certain equipment is required in the new process such as autoclave, mixing roll, crusher and press for moulding. These equipment are also available indigenously.

The project prepared by the Jorhat Laboratory satisfies the specifications prescribed by the Indian Standards Institution (ISI) for tests including cross breaking strength, water absorption, impact strength and surface and volume resistance.

For technical and cost data, interested parties may contact the National Research Development Corporation of India, 61 Ring Road, Lajpat Nagar III, New Delhi.

LOW COST DETERGENT POWDER DEVELOPED

An inexpensive formulation for the manufacture of low cost general purpose laundry detergent powder has been developed by the Regional Research Laboratory, Jorhat. This would help meet the rising demand for detergent powders which are normally manufactured by large industrial houses whose price range is on the high side from the viewpoint of ordinary consumers. The product so developed is stated to compare well with similar products in the market and could be manufactured easily at a low capital investment from raw materials that are available indigenously.

The process involves the dissolution of required quantity of optical whitener in water and the addition of blueing agent to the solution so obtained. Certain chemicals and solid compounds are added to the solution and after thorough mixing under specified conditions the detergent slurry is charged into a spray drier.

For a minimum plant capacity of 50 kg. per day, the cost of production works out far less expensive than for detergents manufactured elsewhere. Barring mixer, spray drier and drums for storage, no sophisticated equipment is required for the production of the new formulation.

The new process is of typical applicability to smaller entrepreneurs.

NEW TYPE OF POWER PLANT DESIGNED

A power plant capable of producing electricity directly from hot gas similar to world's unique MHD generator in Moscow has been designed by Indian scientists, according to the Gujarat Electricity Board.

The plant, called magneto hydro-dynamics (MHD) generator will disperse with moving parts, steam cycles and turbine and will produce power five to twenty per cent less expensive.

NEW CARROT AND TURNIP VARIETIES DEVELOPED

Indian Agricultural Research Institute has had a record of contributing towards the evolution of new methods of food grain cultivation as well as developing high yielding varieties every year. Recently, the Punjab Agricultural University, Ludhiana has developed a new variety each of carrot and turnip.

'Selection 233', the new carrot variety is quick growing, large, smooth and orange coloured. It is rich in calcium and can be harvested in two months after sowing. An interesting feature of the new variety is that even after harvesting the product ramains good for three months. The new variety is a cross between a European variety 'Nantes' and a domestic variety called Carrot Number 29. The seed of the new variety can be sown in the plains. It yields 70 per cent more than the European 'Nantes' and is superior to domestic carrot Number 29.

'L-I' - the new turnip variety developed - is white in colour, round, smooth, rat tailed and crisp. As in the case of the new carrot variety, it can also be harvested in 45 to 60 days after sowing. It is good for late planting and is superior to 'white 4', the variety presently in common use. It yields about 105 quintals per acre against 80 quintals per acre of 'white 4'.

Turnip and carrot are of two types : Asiatic and European. A cross breeding of the two types was initiated in 1965-66. Later, the hybrid progenes, along with parental lines, were sown at Ludhiana. These new varieties have now been approved for general cultivation by the Variety Cultivation Committee.

ON DYE-STUFF INDUSTRY

The Indian dye-stuff industry has developed competence in the manufacture of diverse materials such as azo dyes (acid, direct and mordant), basic dyes, disperse dyes, naphthols, fast colour bases, optical whitening agents, organic pigment colours, reactive dyes, sulphur dyes, vat and other dyes.

The industry is technology-intensive and there has been a substantial degree of foreign investment and collaboration in the context of its development and diversification. Foreign collaboration is not preferred now, however, for the production of many of dyestuff groups. All the same, the industry depends on import of raw materials, although the imports are confined to only certain special items. The development of basic dyes and azo dyes is reserved for the small scale sector.

The plans for future expansion in this industry indicate that during the Fifth Five-Year Plan ending 1978-79, sizeable expansion of production capacity is envisaged for mordant dyes (excluding acid and direct), disperse dyes, fast colour bases naphthols, optical whitening agents, reactive dyes, sulphur dyes and vat dyes. It is the policy of the Government of India to develop capacity for these industries in terms of processing from the basic stage of the raw materials to the final dye.

The dyestuff industry has come to contribute substantially to the overall export growth of the economy. In 1971-72, the export value of the industry was Rs. 24.8 million. Interestingly, even in the first three quarters of 1972-73 the export value far exceeded the previous year's record to reach the level of Rs. 37.55 million. The contribution of acid dyes was of the order of Rs. 2.3 million in 1971-72 and Rs. 2.8 million in the first three quarters of 1972-73. In these periods, the contribution of basic dyes was of the value of Rs. 2.20 million and Rs. 4 million respectively, direct dyes and sulphur dyes Rs. 6.26 million and Rs. 10 million; lakes, solvents and organic pigments over Rs. 3.0 million and Rs. 5.7 million; reactive dyes Rs. 3.3 million and Rs. 5 million; vat dyes Rs. 4.90 million and Rs. 7.3 million and other organic synthetic dyestuffs Rs. 2.65 million and Rs. 1.62 million respectively.

While this being the export picture, the import trade of synthetic organic dyestuff and colour lakes amounted to Rs. 37 million in 1971-72. In addition, imports of dyeing and tanning extracts and synthetic tanning materials amounted to Rs. 31.4 million. A sizeable import bill, an increasing scale of domestic demand and export possibility point out to the need for development in respect of select dye-stuff groups. *Azo dyes* constitute one area. There are seven units with a production of 2500 tonnes per year. Imports during 1971-72 corresponded to Rs. 3.7 million. A capacity of nearly 3500 tonnes has been approved and a little over 3100 tonnes has been installed. Presuming that the balance capacity will materialise shortly, it is to be hoped that domestic demand by 1978-79, estimated at 4000 tonnes, will be by and large met. There is, however, scope, for additional capacity in respect of mordant dyes. Further development of this group is reserved for the small scale sector.

There are six units producing basic dyes of about 700 tonnes per year now. Their imports were of the order of Rs. 2 million during 1971-72. The total capacity approved for these dyes is over 1000 tonnes. This group of dye-stuffs is also reserved for development in the small scale sector and it is felt that there is not much scope for approving additional capacity in this field.

But acrylic fibre dyes are not being manufactured indigenously as yet and domestic demand is being met from imports. A limited capacity of 500 tonnes is expected to be installed by 1975. There is scope for adding to the production capacity.

As for *disperse dyes*, five units are engaged in their production to the tune of about 235 tonnes a year. Imports were of the order of about Rs. 5 million in 1971-72. Against a total capacity of about 930 tonnes approved in the field so far, 480 tonnes worth of the capacity has already been installed and the schemes accounting for the balance are under various stages of progress. The Directorate General of Technical Development has made an assessment according to which the demand for disperse dyes for 1978-79 would be 1200 tonnes corresponding to installed capacity requirements of the level of 1500 tonnes per year. Thus, there would be scope for establishing additional capacity in this field.

Similar scope exists for setting up additional capacity in respect of *fast colour bases*, for the production of which there are seven units now with an annual production of 1000 tonnes. An approved capacity of

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about 1400 tonnes has already been installed but the assessment is that indigenous demand by 1978-79 will go up to 1700 tonnes. Thus, it is felt that there is scope for setting up additional capacity.

Five companies are now manufacturing *reactive dyes* of the order of 800 tonnes a year. Against an installed capacity of 880 tonnes and approved capacity of 1570 tonnes, now it is expected that the installed capacity would increase to 1400 tonnes by 1975. For these dyes, the extent of additional capacity to be covered is estimated to be marginal.

But good scope for further capacity expansion awaits the *sulphur dyes* sector. There are four units now with a production of 1600 tonnes per year and an additional 75 tonnes are imported (1971-72) at a cost of Rs. 1.33 million. The entire capacity of 2500 tonnes approved in the field has already been installed. But the demand estimated for the year 1978-79 shows that 3000 tonnes would be required by that time and obviously the installed capacity to fetch such a production figure should be subtantially in excess of the estimated demand. This is why it is felt that large scale expansion awaits the sulphur dyes industry in India.

Seven factories manufacturing *vat dyes* group with a combined annual production of about 1130 tonnes exist now. Imports of these dyes have been substantial and they stood at over Rs. 11 million in 1971-72. Against a total capacity of 2280 tonnes approved in the field, 1440 tonnes have already been installed and the balance capacity is under implementation. It is estimated that by 1978-79, there would be domestic demand to the tune of 2200 tonnes and, therefore, the scope for additional capacity for this type of dyes would at best be marginal.

There is scope for the establishing additional capacity in the field of naphthols, optical whitening agents and organic pigments. In 1971-72, imports of these dye-stuffs were valued at Rs. 4 million, Rs. 3 million and nearly Rs. 1 million respectively. The substantial foreign exchange outgo on account of these imports would indicate that there is urgent need for capacity expansion in the lines. ☐

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FRESH EXPORT ORDERS FOR ALUMINIUM CONDUCTORS

M/s. Aluminium Industries Limited (ALIND), M G. Road, Cochin (Kerala), one of the firms engaged in the manufacture and export of aluminium conductors and cables, recently bagged two orders - one from Bangladesh Power Development Board and the other from M/s. Crown Agents, London (for supplies to Zambia)–at a value of Rs. 4 million. Earlier in 1973-74, they secured orders from Zambia and Philippines valued at Rs. 2.2 million and Rs. 3.5 million respectively. Thus, the amount of direct orders secured by them during the year reached a level of Rs. 10 million mark.

These orders are exclusive of Rs. 8.5 million worth of orders from Libya which are also under execution during the year.

M/s. Alind have a consistent record of increased export turnover. During 1972-73, their exports were of the order of Rs. 3.86 million while in the preceding year, these amounted to over Rs. 3.50 million.

The first consignment of ACSR conductors to Philippines has already been shipped and shipments of sizeable quantities are to follow soon. The firm's first shipment of steel earthwire to Bangladesh and ACSR conductors to Zambia are also expected to be shipped within a couple of months.

M/s. Alind's cables and conductors manufacturing plant is located at Hyderabad in Andhra Pradesh. The range of manufactures of the plant includes sophisticated wire working machines for aluminium, copper and steel such as wire drawing machine, wire stranding machines, bunching machines, rewinding machines, cables armouring machines, pointing machines and twining machines. These machines are mainly required by the wires and cables industry. The Hyderabad plant was set up in collaboration with M/s. Miyazaki Iron and Steel Works of Japan. M/s. Alind's other plant at Mavelikara (Kerala) for the manufacture of cables has already gone on production stream. Apart from these, two more units are under erection at Bangalore and Coimbatore and are expected to be commissioned shortly.

Besides cables, conductors and steel wire products, the firm has also introduced wire working machines and high voltage switchgears in its export stream. During 1972, they exported wire stranding machines and rewinding machines to Sri Lanka.

Alind's research and development activities have helped save sizeable outgo of foreign exchange. Recently, they have developed a two-head paper taping machine for the manufacture of transformer winding strips and wires. Hitherto, the machine was being imported. They have also manufactured three-core concentric neutral cable and wire working machines. One of the wire working machines, fine-wire drawing machine has been developed on their own design capability and has been marketed recently.

During 1972-73, the firm's production comprised of conductors at 11,355 tonnes (11,172 tonnes in 1971-72) and switchgears Rs. 9 million (Rs. 5.7 million in 1971-72); their production of machinery improved by about 25 per cent during 1972-73 as compared to the preceding year. They are soon to undertake manufacture of 11 KV switchgears and 132 KV circuit breakers.

India's total exports of cables and wires are estimated to have gone upto the level of Rs. 126 million in 1972-73 as compared to Rs. 112.5 million in 1971-72. The major items of export include insulated cables and wires, power aluminium conductors, power cable conductors and other types.

LOCKS AND SANITARY FITTINGS IN EXPORT TRADE

Export orders valued at Rs. 15 million for supply of locks and sanitary fittings have been secured by M/s. Tiger Locks Ltd., Aligarh. The firm is reported to be exporting about one-third of its total output of these products. The export destinations for their products include U.S.A., Canada, Sweden, U.K. and Federal Republic of Germany.

Alongwith its appreciable export performance, M/s. Tiger Locks Ltd. has embarked upon a large expansion programme. It is setting up a new unit at Gurgaon (Haryana), which is expected to go on production stream by April 1974 with an annual turnover of about Rs. 50 million. The Company has also taken over M/s. Indian Implements Manufacturing Co. who are engaged in manufacture of locks in Aligarh. Two other concerns, namely M/s. Tiger Products Private Ltd. and M/s. Anchor Processing Private Ltd. are also likely to get amalgamated shortly with this firm. With the implementation of their expansion schemes, the sales of the firm are likely to more than double to Rs. 40 million from the present level of Rs. 19 million.

Indian's exports of locksmiths wares including locks and padlocks amounted to Rs. 12.69 million during 1972-73. Locks and keys alone which constituted one of the major export items in the group earned as much as Rs. 2.72 million. Bulgaria topped the list of buyers, having imported worth Rs. 0.54 million. followed by Yugoslavia at Rs. 0.32 million, Hungary at Rs. 0.23 million and Poland at Rs. 0.15 million. German Democratic Republic, German

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Federal Republic, Iraq, Jordan, Saudi Arabia, U.K. and A.R.E. were the other prominent markets. Foreign exchange earning of padlocks was of the order of Rs. 3.15 million. German Democratic Republic with an intake worth Rs. 1.23 million was the chief buyer. Poland, U.S.A., Czechoslovakia and Yugoslavia were among the other main destinations.

GROUNDNUT EXTRACTIONS EXPORTS UP

India-manufactured groundnut extractions are in widespread demand overseas. The country supplies abroad a number of groundnut products. These include solvent extracted groundnut oilcakes and oil cake meal (expeller variety), groundnut in shell, groundnut kernels, groundnut oil including deodorised and hydrogenated varieties and groundnut shells.

During 1971-72, solvent extracted groundnut oilcake alone earned Rs. 340.87 million. Japan was the biggest buyer during the year which bought 120,108 tonnes valued at Rs. 64.36 million. Hungary ranked as the next best importing country, having imported 88,815 tonnes at a cost of Rs. 49.15 million, followed by Poland at Rs. 47.70 million (82,285 tonnes), German Democratic Republic at Rs. 44.80 million (79,870 tonnes), U.K. at Rs. 37 million (63,230 tonnes), U.S.S.R. at Rs. 34.42 million (58,834 tonnes), Czechoslovakia at Rs. 19.90 million (33,565 tonnes) and Bulgaria at Rs. 7.35 million (12,738 tonnes). Federal Republic of Germany, Thailand, Singapore, Romania, Cyprus and Lebanon were prominent among other purchasing countries.

During the first three quarters of 1972-73 (April-December 1973), the exports of groundnut oilcake totalled Rs. 340.78 million, nearly as much as the export value of the entire preceding year. The quantity supplied overseas was of the order of 503,656 tonnes. Poland emerged as the leading purchaser, having absorbed 92,776 tonnes at a cost of Rs. 63.92 million, while Japan which figured as the principal buyer in the preceding year imported 77,413 tonnes at a value of Rs. 56.55 million. The export value of other importing countries was : U.K. Rs. 51.70 million (83,257 tonnes); U.S.S.R. Rs. 43.55 million (61,872 tonnes); Hungary Rs. 33.45 million (48,696 tonnes); German Democratic Republic Rs. 21 million (33,512 tonnes); Netherlands Rs. 20.90 million (29,770 tonnes); Czechoslovakia Rs. 19.90 million (31,814 tonnes) and Federal Republic of Germany Rs. 10.40 million (16,055 tonnes). Thailand, Yugoslavia, France, U.S.A., Reunion Islands and Bulgaria were significant among other markets.

During the first two quarters of the current year (1973-74), M/s. Food Corporation of India (FCI), a public sector undertaking, secured orders valued at over Rs. 6 million for the supply of groundnut extractions abroad. Japan, Poland and the U.K. were the major purchasing countries.

Of the total orders secured by the FCI, the bulk, 3,800 tonnes (valued at Rs. 5.7 million) out of a total quantity of 4,050 tonnes, is to the supplied against hard currencies.

The Corporation set up a solvent extraction plant at Ujjain in Madhya Pradesh last year. Groundnut extractions are a bye-product of this plant. Claimed to be the first of its kind in the country, the plant is known as M/s. Foodcrop Nutrition Products. It is estimated to process about 30,000 tonnes of groundnut kernels annually – the capacity expected to be achieved by November 1973.

As against the plant's installed capacity of 16,000 tonnes of refined groundnut oil per annum, its production is of the order of about 13,000 tonnes, accounting for more than 80 per cent of the total capacity installed. Apart from groundnut oil, the plant also produces about 12,000 tonnes of high quality decuticled edible flour which is mainly utilised for children's nutrition diet programme of the Corporation.

CHEWING GUM - A NEW EXPORT ITEM

Recent orders secured by M/s. Warner Hindustan, Warangal Road, Oppal, Hyderabad-39, for supply of chewing gum valued at Rs. 500,000, to Czechoslovakia and Nigeria have added one more non-traditional line to India's export stream.

The first consignment - a part of the order secured from Czechoslovakia - has been shipped recently from Bombay. The firm is hopeful of receiving more orders from a number of countries abroad for the product.

The Hyderabad firm is presently engaged in the manufacture of various pharmaceutical formulations, proprietatry and toiletry products and also for the production of isonicotinic acid, Hyderazide - an anti-T.B. drug, nicotinic acid amide and basic chemicals namely Gemma-picoline, Beta-picoline, Alpha-picoline and Pyridine.

India-manufactured confectionery and other sugar preparations are well received at home and abroad. Sweatmeat, flavoured or coloured sugar syrup molasses, chocolate confectionery and other confectionery are supplied to U.K., Sudan, Malaysia, Nepal, Dubai, Kenya, Kuwait, Muscat and Bahrein Islands.

EXPORT PERFORMANCE AND POTENTIAL

VALUE ADDED PRODUCTS ON EXPORT DEBUT TO LIBYA

The Indian Embassy in Tripoli (Libya) has recently reported that several non-traditional products of engineering and electrical origin have successfully entered the Libyan market for the first time. Indian vehicles, particularly, buses and trucks, have been approved by the Libyan authorities, and have made a successful entry into the market. Another breakthrough was achieved in the supply of petrol pumps to M/s. Brega Marketing Company of Libya. Indian switchgears have also been introduced into the market for the first time during August this year with an encouraging order having been placed on an Indian firm and with a regular order of larger volume and value to follow on an annual basis.

It is further reported by the Indian Embassy that a wide variety of electrical accessories of Indian origin are in good demand in the market, especially, sockets, plugs, tubelight fixtures, lamp holders and electrical appliances.

Additional orders for 1200 units of pumps have been secured by M/s. Kirloskar Oil Engines, Poona whose products, particularly pumps and oil engines, have already found a popular market in that country. M/s. Batliboi Company of Bombay have also secured business to the tune of 7,000 Dinars (Rs. 0.2 million) for electrical fittings and pressure blow lamps.

As regards tea, M/s. Tata Finlay have received an order – an additional business in the long chain of orders received by them - worth nearly 365,000 Dinars or over Rs. 1 million.

The Indian Embassy has further reported that non-traditional supplies from India including bicycles and spare parts, barbed wire and poles, stainless steel ware, cutlery, sanitaryware, valves and water tubes, hospital equiment, calculating machines, ceiling and table fans and welding electrodes are in demand in Libya.

The Libyan market absorbed Indian goods worth as much as Rs. 18.4 million in 1971-72, while in the first three quarters of 1972-73, the exports reached the level of Rs. 20 million. Next to the Arab Republic of Egypt, Sudan, Nigeria, Kenya and Zambia, the Libyan market occupies a place of pride in India's export trade with the African continent.

The prime groups of commodities active in India's export list to Libya were detailed in this Weekly dated September 8, 1973.

ELECTRICAL EQUIPMENT TO AFRICAN MARKETS

Demand for electrical equipment has been rising in the African markets. As these countries have little indigenous production of the equipment, the scope for increasing exports of Indian equipment is considerable, according to the report submitted by an Indian Delegation which has recently visited Zambia, Kenya, Libya, Tanzania, Nigeria, Arab Republic of Egypt and Kuwait under the auspices of the Indian Electrical Manufacturers' Association.

All the countries visited evinced keen interest in extending electricity supply to rural areas and look forward to deriving benefit from the Indian experience. These countries also showed interest in establishing manufacturing facilities in the form of joint industrial ventures. The Delegation felt that the vehicle of joint ventures is particularly useful in Nigeria and Kenya. In view of the shortages of technical manpower in the countries visited, interest was shown in bridging the gap with technicians from India.

To the Zambian market, India has so for exported electrical equipment only in a limited way. In the recent past, the Zambian market imported transformers from India. But a glance at the import picture of electrical equipment into that country would reveal that the market's import bill is sizeable in respect of power generating machinery, cables and wires, domestic appliances, switchgears, electric motors and batteries and accumulators.

In Tanzania, large scope awaits expansion of Indian exports. The prospects of trade promotion between the two countries have been recently enhanced by a recent commitment by India to provide that country with technical assistance. Zanzibar is planning to increase its installed electrical generating capacity. This market is likely to be mainly developed for diesel generating sets and L. T. equipment. The State Trading Corporation of India felt that there is unfulfilled demand for air conditioners and refrigerators in this market. Tanzania has also been importing appreciable quantities of fluorescent tubes, insulating materials, table and ceiling fans, lighting fittings and special types of dry cells. India can compete in these.

Kenya has been an important trading partner of India in Africa. In this country, there is hardly any production of electrical items excepting electrical lamps (15 to 200 W GLS), some varieties of PVC insulated cables and dry batteries. The Kenyan economy resorts to sizeable purchase of electrical power machinery, electric apparatus for circuit making and breaking, electric measuring and controlling equipment, electric motors and electric lamps. Indian supplies in this field are at an advantage with regard to freight and transit time since regular shipping services are available between Indian ports and Mombasa.

In Nigera, the demand for transformers of 7.5, 10, 15 MVA, 132/33 KV and 132/11 KV, OLTC, AAC/ACSR conductors, is high. In view of the emphasis on electrification, Nigerian demand for diesel generators is also picking up. Indian exports to Nigeria received a boost in 1970-71, mainly because of expanded shipments of transport equipment (trucks). The specific areas in which the joint ventures are viable economically include transformers, motors and pumpsets, household electrical appliances and accessories, AAC/ACSR conductors, domestic house wiring cables and flexibles.

Libya is yet another market which offers good prospects for India's export trade in electrical equipment. A number of representative contractors and suppliers whom the Indian Delegation met have been impressed with the capacity of Indian manufactures and their range of products, especially as good progress had already been achieved by two Indian firms on large contracts covering a textile complex and a transmission network in Tripolitania. The existence of sizeable demand in the Libyan market came to the notice of the Indian Delegation for products such as house wiring cables, household accessories, lamps and tubes, electrical transformers and so on.

Indeed, the Arab Republic of Egypt is an example of the African markets where the Indian manufacurers have proved their competence. While A.R.E. manufactures AAC/ACSR conductors, cables, motors up to 15 hp and transformers upto 11 KV and 10 MVA, there is no switchgear production and the domestic cable factory hardly meets 40 per cent of the total demand and a large proportion of the requirements of transformers below 33 KV is met from imports. The demand for high voltage transformers remains unfulfilled from local sources.

Some Indian manufacturers have also established themselves in Kuwait. Turnkey contracts offer good promise in this country. Such contracts include now even consumer connections and telephone cable laying for new colonies and townships. Kuwait has been a traditional market for Indian goods. If the freight advantage is utilised to the maximum and necessary co-operation established for submitting offers for turnkey jobs, Indian share of the market could be increased substantially. Indian construction firms can also participate in the construction programmes through Kuwaiti agents. The principal items of demand in Kuwait are electric cables and wires, electrical apparatus for making, breaking and protection of circuits; refrigerators, power plants and machines, electric generators, domestic electric appliances, measuring and controlling instruments, electric water coolers, accumulators and electric lamps.

PHILIPPINES TO BUY INDIAN COACHES

The Philippine National Railways have decided to purchase thirty economy coaches from India. The import is sought to be made from the Projects and Equipment Corporation of India Limited. The thirty new economy coaches are stated to cost approximately Pesos 22 million.

EXPORT TRENDS IN BASIC CHEMICALS, PHARMACEUTICALS AND SOAPS

India's export of basic chemicals and allied items falling under the purview of the Basic Chemicals, Pharmaceuticals and Soaps Export Promotion Council, Bombay, is estimated to have increased to Rs. 278.62 million in the first half of 1973 (January-June) from Rs. 165.82 million during the corresponding period of the previous year. This represents a rise of 68 per cent in the export value.

The increase in the period under review of 1973 was notable in the group of drugs, pharmaceuticals and fine chemicals. The value of these exports rose by more than three times to Rs. 146.20 million compared to Rs. 41.42 million in January-June, 1972. Medicinal castor oil, antibiotic preparations, antidiabetic drugs, absorbent cotton, proprietary and patent medicines, benzidine dihydrochloride, carbon black, aluminium sulphate, rare earth chloride, tooth paste, psyllium husk, psyllium seeds and senna leaves and pods were the prominent items which contributed to the increase.

Glycerine, soaps, detergents, cosmetics and toiletries including processed talc constituted another sector of export growth. The overseas supply of these products earned Rs. 20.53 million and Rs. 16.70 million respectively in the periods of review in the two years. Crude drugs improved their export performance to Rs. 25.28 from Rs. 24.13 million, while essential oils earned more at Rs. 16.56 compared to Rs. 4.28 million. Agarbattis also improved their export earning marginally to Rs. 7.76 million compared to Rs. 7.30 million. Dyes, intermediates and alcohol formed yet another area of export expansion. The value of these exports picked up to fetch Rs. 31.60 million against Rs. 30 million in 1972 (January-June).

In the two comparable periods, the export earning of inorganic chemicals, organic chemicals and agro chemicals, however, suffered a set back in 1973. The export value of inorganic chemicals was less at about Rs. 26 million compared to Rs. 27.80 million in 1972 (Jan-June), while organic chemicals registered a decline at Rs. 2.57 million as against Rs. 4.45 million. Similarly, agro-chemical exports were less at Rs. 0.55 million against Rs. 1 million in 1972.

EXPORT POSITION OF COIR GOODS

India's export of coir and coir goods more or less maintained the same level during the first five months of 1973-74 (April-August 1973) as compared to their export value during the corresponding period of the preceding year. The exports were of the order of Rs. 48.55 million as against Rs. 48.80 million. In terms of quantity, 14.70 million kgs. were supplied abroad as compared to 16.45 million kgs. during the respective periods.

During the period under review of 1973-74, coir mats and coir matting constituted the major items of export growth. The export value earned by these items amounted to Rs. 21.55 million and Rs. 3.10 million as compared to Rs. 18.65 million and Rs. 2.00

million respectively. Both these items were, in fact, responsible for setting off the shortfall in the export value of a number of products in the line, particularly of coir yarn, the value of which came down to Rs. 23.25 million (April-August 1973) from Rs. 26.15 million in the same period of the preceding year. Coir fibre, coir rugs and carpets, coir ropes, curled coir and coir of other sorts are the items, the export value of which reduced marginally during the period under review of 1973-74.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

INDIA'S STAND ON INTERNATIONAL MONETARY REFORM

Any attempt on reform of the International Monetary System must ensure that the organisation builds up its structure in the interest of the world community rather than in the interest of any limited group of countries, stated India's Finance Minister, Mr. Y.B. Chavan, addressing the Annual Meeting of the World Bank and the International Monetary Fund. On major issues which affected the developing countries, the solutions depend on the willingness of the industrial countries to accept the simple proposition that the problems facing the developing countries are as much a responsibility of the international community as a whole as are those encountered by the developed countries.

Referring to the developments in the exchange markets earlier in 1973, the Finance Minister stated that these would further underline the urgency of the task of re-shaping the world monetary system. There have been intensive discussions in the Committee of Twenty in the IMF, but an agreed outline of the new monetary order was still not in sight. Contrary to expectations at the July Meeting of the Committee of Twenty, it was not possible for the Committee to submit to the Board of Governors an agreed outline on reform. The Committee had earlier agreed that SDR (Special Drawing Rights) should become the principal reserve asset of the reformed system and the role of reserve currencies should be reduced. But no agreement has yet been evolved as to how this should be brought about. The Committee also recognised the desirability of promoting economic development in the context of monetary reform, and the flow of real reserves from developed countries to developing countries. When cencrete proposals having the backing of developing and the majority of developed countries were submitted to the Committee of Twenty, here again progress was stalled because of the opposition of a few powerful countries.

The developing countries welcomed the formation of the Committee of Twenty since it implied that for the first time in many years, crucial questions concerning international monetary system would be debated in a forum in which they have full participation. These countries have indeed submitted concrete proposals. But the solution does not depend on technical considerations. It depends on the willingness of industrial countries to accept the simple proposition that the problems facing the developing countries are as much a responsibility of the international community as a whole as are those encountered by the developed countries; that international monetary problems and their solution cannot be divorced from the larger problem of securing rapid development of the poorer countries of the world; that problems of equitable distribution of world output demand as urgent an attention as those of securing stability and rapid growth.

Expressing the Government of India's views, the Finance Minister said that member countries of IMF should be ready to a accept the need for timely adjustment action. Secondly, his country would accept the notion that convertibility and stable exchange rates have to be restored in the near future if the present uncertain monetary arrangements are not to distort international trade and investment programmes. In endeavouring to restore convertibility, the question of the large outstanding currency balances has to be first resolved. It would be advantageous, however, to the interest of the monetary system if these balances were automatically transferred to the Fund and the SDR system via the substitution facility. To do so on a large scale might damage the SDR as a reserve asset at the very outset of its career. The problems of these outstanding balances should be dealt with mainly on a bilateral basis between those who issued these currencies and their recipients rather than letting them burden the international monetary mechanism as a whole.

The Finance Minister also expressed the belief that as a corner-stone of the new monetary system, there should be a built-in mechanism for an adequate transfer of real resources of developing countries. The proposal to establish a link between SDR's and development finance is not only technically sound and feasible, but is also consistent with the requirements of the strategy under-lying the Second United Nations Development Decade, he stated.

The new Fund should be structured in a manner that will accord to developing countries the role which they deserve by virtue of their numbers and size in the decision making process. Even though the number and size of developing countries in IMF membership has expanded substantially, the weight of these countries in the decision making process has remained stagnant.

Referring to the Annual Report of the World Bank Group, Mr. Chavan stated that apart from surpassing the fiscal targets for lending, there have been many qualitative changes of a significant nature. There has been a considerable re-orientation in the lending activities of the World Bank and the IDA in keeping with the needs of developing countries with particular attention to the needs of the very low per capita income countries. Mr. Chavan expressed the hope that the World Bank would continue to provide the much needed support for the basic economic infra-structure and for industrial development in the developing countries. He referred to inhibitions which sometimes govern the present lending practices of the Bank, especially when it provides finance for basic industries, oil refining or shipping. He said that in view of the mounting burden of international indebtedness of many developing countries, new concepts must be evolved for rescheduling of these debts ensuring that re-payment would not disrupt the viability of the development plans.

Despite the encouraging trends in the Bank's lending activities, the international environment for developing countries continues to be highly unfavourable. The growth of developing countries, especially of countries other than petroleum producers, is below the targets set for the Second Development Decade and the growth rate in the least developed countries has been still slower. If international co-operation is to have any real content and meaning, this process would have to be reversed. The aggregate net transfer of resources from the developed world continues to be stagnant. In 1972, it declined in real terms by 3 per cent and as a percentage of GNP of developed countries, the flow of resources came down from 0.82 per cent in 1971 to 0.77 per cent in 1972. The targets of 0.70 per cent of GNP as official development assistance is no where near fulfilment and the percentage has declined from 0.35 in 1971 to 0.35 in 1972 - being less than half of the target. While the boom in commodity prices provide some relief to primary producing countries, the benefit is not widely shared and a large part of the developing world had been adversely affected by the failure of adequate export expansion opportunities in the face of a sharp rise in import prices. Attempts by developed countries to remove tariff and non-tariff barriers restricting the export of developing countries have been feeble. Uncertainties caused by frequent monetary upheavals are only added to the balance of payments problems of developing countries. These trends need to be appreciated in any meaningful effort towards world economic cooperation.

HINDUSTAN SHIPYARD SAVES FOREIGN EXCHANGE

The Hindustan Shipyard Limited, Visakhapatnam, has so far contributed to the Indian economy a net saving of about Rs. 300 million in foreign exchange. Its share in the fleet of the premier Shipping Company, the Shipping Corporation of India, was around 30 per cent in terms of number. For the first time in many years, the Shipyard had 25 ships on order comprising 5 liner type vessels, 8 "Pioneer" class minibulk-carriers and 12 multi-purpose vessels. The orders on hand aggregated about 410,000 DWT for the various ship owners.

The Shipyard has been trying to encourage indigenous manufacture for a large number of ship-building equipment and materials. These now accounted for about 50 per cent of the total input of materials in the construction of a ship costing about Rs. 10 million. The products of the Indian manufacturers not only resulted in the saving of foreign exchange to the extent of 70 per cent of the cost of each ship built in the country, but they also earned recurring foreign exchange as a result of their operations.

The value of production in the Shipyard registered a 40 per cent improvement over the previous year and totalled Rs. 127.6 million in 1972-73. There has been a steady progress in the performance of Shipyard during the last four years. From Rs. 69.66 million in 1969-70, the production rose to Rs. 127.60 million during 1972-73, registering an increase of 83 per cent.

Shipping tonnage in India is sought to be expanded from 4 million GRT targetted by the end of Fourth Five Year Plan (1969-70 to 1973-74) to 9 6 million GRT proposed to be achieved by the end of the Fifth Plan (1974-75 to 1978-79). This would underline the urgency for augmenting the ship building capacity of the country. The cost for setting up a shipyard capable of producing very large crude carriers (VLCC) would be about Rs. 810 million including Rs. 150 million in foreign exchange. The shipyard would be able to turn out the first such ship in about five years, adding the second one soon, each costing Rs. 400 million and yielding a net foreign exchange saving of Rs. 280 million per ship.

The execution of the first phase of the programme would enable the Yard to build 4 ships of "Pioneer" type, i.e. 84,000 DWT annually. The second part of the first phase envisaged building bigger ships of 60,000/80,000 DWT.

DECORATIVE JUTE FABRICS

A rupees 5.5 million worth of project is being set up at Bhavnagar (M/s. Julon Fabrics Limited) to manufacture jute fabrics suitable for a wide range of furnishing and decorative uses according to the information received from the Indian Jute Mills Association, Calcutta.

The Company expects to receive a good export demand for jute cloth converted into high quality fashion fabrics for such use as upholstry, wall covering seat covers and tents. The plant is scheduled to go into commerical production by March, 1974. Product diversification to suit overseas consumer demand is an important aspect of promoting the jute industry in India. The traditional lines of export among jute manufactures, important as they are, are facing stiff competition from synthetics and substitutes in the world markets. The desire of Indian jute industry for diversifying the end-use of the jute products for furnishing and decorative uses rather than using the material for bulk packing is, indeed, justified and the effort of the Bhavnagar firm in this direction is a step in that direction.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

FLY ASH FOR BRICKS

The Central Building Research Institute (CBRI), Roorkee, has developed a process for the manufacture of building bricks from fly ash, an important waste material obtained from thermal power stations using pulverised coal.

The use of fly ash for making bricks has a number of advantages. Fly ash generally contains about 5 to 6 per cent unburnt carbon. Its addition in clay, therefore, results into better burnt bricks and a saving in coal consumption during firing. The reduction in the coal consumption will partly solve the problem of coal shortage faced by brick manufacturers from time to time, besides reducing the cost of production. Fly ash can also be used for demoulding the bricks. Fly ash when used in place of moulding sand, improves the texture of the bricks. Incorporation of this ash also reduces the drying shrinkage of the bricks and is superior to black-cotton clays which produce drying cracks in the bricks. Incorporation of this ash in clay in the requisite proportion results into 15 to 25 per cent reduction in the weight of the bricks which, therefore, have better thermal insulation.

Partial replacement of clay by fly ash for the manufacture of bricks results in the saving of clay. The main raw material, clay, therefore, lasts for a longer period and delavs the shifting of the klin to the next site. The process, thus, indirectly saves agricultural land. Clay-fly ash bricks can also be used for all type of brick masonry.

There is always a large demand of building bricks in the country As the addition of fly ash in clay does not alter properties of the bricks, these can be used for all types of construction where normal clay building bricks are used.

Two large-scale field trials have been conducted in this context and the bricks manufactured, have been found satisfactory.

The raw materials, clay and fly ash, are easily available indigenously. The capital investment for a plant capable of producing 30,000 bricks per day or 72,00,000 bricks per season is estimated to be Rs. 3,76,000 for mechanical mixing plant and Rs. 4,42,000 for manual mixing plant.

CASHEWNUT SHELL LIQUID EPOXY RESIN DEVELOPED

Epoxy coatings are stated to lack in water resistance, bleeding on recoating with paints and such other defects.

With a view to minimise such defects, the Research, Designs and Standards Organisation (RDSO), Ministry of Railways, Lucknow, has successfully developed a process for the preparation of epoxy resin coal tar pitch/bitumen composition from cashewnut shell liquid.

The process developed by RDSO consists of making a solution of pitch/bitumen in solvent naphtha in a suitable mixing equipment. After pitch/bitumen gets into complete solution, CNSL epoxy resin solution is added and incorporated by thorough mixing. Finally, the ratio of the non - volatile and volatile portions is adjusted to the required percentages, if necessary, by the addition of further solution.

The composition has been manufactured on a large scale and found satisfactory from the point of protection of corrosion. In addition, dilution of epoxy resin with coal tar has the additional advantage of reducing cost.

The raw materials required for these compositions are mainly CNSL epoxy resin, coal tar pitch/bitumen and some solvents. All these are available indigenouly. The equipment required for the process can also be fabricated indigenously.

CNSL epoxy resin coal tar pitch/bitumen coatings find wide application in lining of crude oil tankers, steel water tankers, hulls of ships, exterior or buried steel pipe lines and iron tunnelling underground, turnunders and through floors of steel coaches and on surfaces which are inaccessible for maintenance painting and on which protection against corrosion is of primary importance.

The present demand of such compositions for anticorrosive treatment of ferrous surfaces is being met in the country by manufacturing these compositions based on either imported epoxy resins or epoxy resin made indigenously with imported ingredients.

INDIA'S EXPORT TRADE IN 1972-73

A record level of export earnings has been achieved by the Indian economy during 1972-73 at a value of Rs. 19,544.5 million as compared to Rs. 16,031.5 million in 1971-72. The value of re-exports during 1972-73 was of the order of Rs. 64 million as compared to Rs. 51 million in 1971-72. The export growth witnessed in 1972-73 was in respect of most of the product groups that have been on the country's export front, both in the traditional and non-traditional groups of commodities.

In the food and live animal group, export trade in meat and meat preparations, fish, cereals and preparations, crude and vegetables, coffee and oilcakes has registered sizeable uptrends. The off-take of meat and meat preparations has more than doubled from Rs. 14 million to nearly Rs. 35 million. Fish and fish preparations were supplied abroad at a value of Rs. 538 million in 1972-73 against Rs. 414 million in the preceding year. Interestingly, the export trade in wheat was valued at Rs. 683 million against Rs. 121 million. Fresh fruits and nuts including cashew kernels secured Rs. 721 million as compared to Rs. 635 million. Preserved fruits and fruit preparations have brought in Rs. 29 million against Rs. 18 million. Vegetable exports both in the fresh and preserved form secured Rs. 53 million as compared to Rs. 47 million. Overseas demand for Indian coffee has picked up sizeably; it earned Rs. 330 million against Rs. 220 million in the comparable periods. Oilcakes constituted another example of dynamic export expansion having secured foreign exchange worth nearly Rs. 800 million as against Rs. 440 million.

There was, however, a shortfall in the export of one of the most important traditional commodities, tea; this product earned Rs. 1,473 million against Rs. 1,563 million. Spices was another group which witnessed down trend to Rs. 291 million against Rs. 362 million.

Tobacco exports have improved substantially. The un-manufactured variety was exported to the tune of Rs. 610 million against Rs. 422 million. The export trade in tobacco manufactures was more or less maintained at about Rs. 28 million.

In the category of crude materials, the off-take of wood, lumber and cork has picked up. The export value of wood in the rough and roughly squared form particularly, brightened to the level of Rs. 94 million against Rs. 69 million. Oil seeds, oil nuts and oil kernels also fetched more at a value of Rs. 68 million against Rs. 67 million.

Textile fibres, particularly cotton, wool and silk were in much demand overseas. Raw cotton exports fetched Rs. 247 million against Rs. 183 million while those of wool and animal hair secured nearly Rs. 70 million as compared to only Rs. 43 million in the preceding year. The off-take of raw silk has also improved to the tune of Rs. 8 million against Rs. 4 million. Raw jute exports, however, fell from a level of Rs. 130 million in 1971-72 to only Rs. 49 million in the following year.

In the group of minerals, metalliferrous ores, metal scrap and crude minerals were exported to the tune of Rs. 223 million against Rs. 200 million. In this category, the principal items that were active on export front were mica, quartz common salt calcined kyanite, calcined magnesite and natural steatite powder.

Export effort in iron ore and concentrates has yielded further success. This ore was supplied abroad to fetch nearly Rs. 1,998 million against Rs. 1,047 million in the preceding year. Export trade in the ores and concentrates of non-ferrous base including manganese ore was of the order of Rs. 147 million against Rs. 141 million.

Quite a few crude vegetable materials figured prominently in India's export trade list. They include henna leaves and powder, gums and resins, lacs, tamarind, guar flour and palm fibre. These materials earned as much as Rs. 396 million in foreign exchange as compared to Rs. 376 million in the previous year.

Export trade in coal and coke has also looked up to fetch Rs. 32 million against Rs. 10 million. The major categories of exports were high volatile bituminous (Rs. 24 million), the major importers being Burma and Bangladesh and hard coke (Rs.3 million).

Crude petroleum worth Rs. 156 million and petroleum products valued at Rs. 132 million were exported in 1972-73 while the export value of these categories in the previous year amounted to nearly Rs. 105 million. Itemwise nearly 0.92 million tonnes of crude petroleum was supplied while 43.5 million litres of motor spirit and nearly 75 million litres of kerosene was supplied abroad.

In the fixed vegetable oil group, there was a remarkable export growth registered for castor oil. This oil fetched as much as Rs. 226 million in 1972-73 against Rs. 62 million in 1971-72. The major importers were U.S.S.R., U.S.A., U.K., France, Czechoslovakia and Japan.

Chemicals and allied products which are new entrants in India's export trade have also fared exceedingly well. Foreign exchange earning of the entire group was nearly Rs. 404 million as compared to Rs. 354 million in 1971-72. While the group of chemical elements and compounds fetched Rs. 76.4 million against Rs. 72 million, the performance of inoraganic chemicals, elements and oxides was particularly encouraging. Organic chemicals, however, saw a marginal decline. Dyestuffs, tanning and colouring materials were also exported more. In this category, the export performance of pigments, paints and varnishes was brighter at Rs. 46 million against Rs. 28 million while that of synthetic organic dyestuffs proved equally important to fetch Rs. 54 million against Rs. 25 million. Medical and pharmaceutical products constituted another line of export growth as these products brought in Rs. 103 million against Rs. 96 million. There was a uniform rise for all the categories of essential oil and perfumery materials including toilet preparations. Essential oils were supplied overseas to the tune of Rs. 41 million against Rs. 39 million, perfumery and cosmetics Rs. 42 million against Rs. 32 million and soaps and polishing preparations Rs. 18 million against Rs. 16 million.

In tune with the Govenment of India's determined policy to boost up export trade in leather and leather manufactures, these exports witnessed a near doubling in their foreign exchange earning. Leather exports alone accounted for Rs. 1,704 million as compared to Rs. 900 million. Leather manufactures such as saddlery and other harness maker's goods, leather uppers and leather components of footwear were prominent in the export field.

India supplies abroad a variety of paper and paper board as well as articles made of paper pulp. These products have been in keen demand overseas as proved by the fact that their exports earned nearly Rs. 42 million in 1972-73 as compared to Rs. 29 million in the previous year.

Textile yarn and fabrics constitute one of India's prestigious items of export. This group was exported to the tune of Rs. 4,570 million as compared to Rs. 4,288 million. Textile yarn and thread secured Rs. 371 million against Rs. 281 million. Woven textile fabrics (other than cotton and jute) fetched Rs. 156 million against Rs. 136 million and floor coverings and tapestries Rs. 270 million against Rs. 198 million. But the most significant increase in this line was that of cotton manufactures which fetched Rs. 1,267 million against Rs. 1,000 million. Export trade in jute manufactures, however, declined to Rs. 2,472 million from Rs. 2,633 million.

Overseas supplies of pearls and precious stones secured Rs. 780 million against Rs. 515 million.

In the manufactured products group, iron and steel exports witnessed improvement at Rs. 418 million against Rs. 409 million in 1971-72. The major categories responsible for the improvement in the iron and steel export group were pig iron, steel ingots and other primary forms, universal plates and steel tubes and pipes. The off-take of bars and rods as well as rails and railway track construction material was, however, reduced.

Among non-ferrous metals, copper was exported to fetch Rs. 48 million against Rs. 45 million and aluminium Rs. 34.5 million against Rs. 34 million.

Of metal manufactures, the active product groups were machine tools and handtools, household equipment of base metals and finished structurals. The most striking improvement was in respect of hand and machine tools which netted Rs. 74.5 million against Rs. 59 million.

In the non-electric machinery group, export improvement was obvious in the case of power generating machinery, office machines and industrial machinery and appliances, as well as agricultural machinery and implements. The machinery group in all fetched Rs. 294 million as compared to Rs. 242 million.

Almost all the varieties of electrical machinery and apparatus witnessed uptrend. This group has been consistantly active in the export-trade in recent years and in 1972-73, the export value reached a record of Rs. 234 million as against Rs. 187 million in the preceding year. Electrical power machinery and switchgears secured Rs. 56 million as compared to Rs. 47 million, equipment for distributing electricity Rs. 66 million against Rs. 54 million, domestic electric equipment Rs. 31 million against Rs. 15 million and other electrical machinery Rs. 51 million against Rs. 39 million. Telecommunication apparatus, however, did not much improve its export performance but maintained the trade at around Rs. 29 million.

While the entire group of transport equipment netted foreign exchange worth Rs. 315 million as against Rs. 309 million, the most important growth sectors were road motor vehicles and bicycles. Road motor vehicles were exported at the value of Rs. 160 million as compared to Rs. 149 million. Bicycle exports were up at Rs. 104 million against Rs. 73 million.

Clothing constituted another line of export promotion mainly comprising of cotton dresses, man-made fibre garments, shawls and scarves, knitwear and woollen wear such as, sweaters and cardigans. These exports were up at Rs. 560 million against about Rs. 375 million.

A variety of footwear including rubber footwear, leather soled and embroidered rubber soled footwear was in good demand abroad. The footwear group fetched foreign exchange worth Rs. 129 million as against Rs. 118 million in the comparable years.

There was also an improvement in respect of export trade in scientific, medical and other instruments as well as developed cinematographic films. The former group secured Rs. 33 million against Rs. 17 million while the latter earned Rs. 54 million against Rs. 50 million.

An analysis of directionwise trends in India's export trade would also make an interesting study. The African Continent absorbed Rs. 1,010 million in 1972-73 as compared to Rs. 1,319 million in 1971-72. The shortfall was inspite of improved off-take by countries like Dahomey Republic, Libya, Mauritius, Sierra Leone, Tunisia and the A.R.E. The largest share in the export trade with African Continent was that of A.R.E. whose imports from India were of the order of Rs. 317 million against Rs. 230 million. Among the countries that have reduced their imports were Ethiopia, Kenya, Malawi, Nigeria, Somalia, Sudan, Tanzania, Uganda and Zambia. The largest decline was in respect of Sudan, from Rs. 517 million to Rs. 207 million.

The U.S.A. imports from India went upto Rs. 2,754 million against Rs. 2,628 million. Canadian purchases were reduced to Rs. 280 million from Rs. 394 million.

The Latin American region imported only worth Rs. 42 million as compared to Rs. 126 million. The decline was due to the reduced off-take of some of the important trading partners such as Argentina, Brazil, Chile, Mexico, Peru and Urugay. The Argentine imports fell substantially from Rs. 60 million to only Rs. 7.7 million. There was, however, an improvement in the purchases of countries like Bolivia, Columbia, Dominican Republic, Panama Republic and Venezuela. The other South American countries (non-Latin American) have also reduced their intake from India to the tune of about Rs. 22 million as compared to Rs. 32 million.

Japan leads the list of ECAFE importers. While the entire ECAFE absorbed as much as Rs. 5,554 million against Rs. 4,228 million, the Japanese purchases amounted to Rs. 2,167.5 million as compared to Rs. 1,817 million. The growth of exports to other FCAFE countries would also make a revealing study. Afghanistan imported worth Rs. 122 million against Rs. 98 million; Hong Kong Rs. 198 million against Rs. 155 million; Indonesia Rs. 53 million against Rs. 32 million; Iran Rs. 247 million against Rs. 197 million; Nepal Rs. 350 million against Rs. 284 million. Bangladesh Rs. 1,572 million against Rs. 423 million; Singapore Rs. 178 million against Rs. 175 million and Thailand Rs. 57 million against Rs. 46 million. Among the countries that imported less in 1972-73 as compared to the previous year were Australia, Burma, Sri Lanka, Republic of Korea, Mauritius and New Zealand.

In the non - ECAFE Asian group of countries, significant increases were recorded in India's exports to Iraq, Kuwait, Dubai, Lebanon, New Guinea, Qatar, Saudi Arabia, Syria and Yemen Arab Republic.

The East European region once again proved to be the most important importer of Indian goods. The region as a whole absorbed worth Rs. 4,695 million against Rs. 3,435 million. U.S.S.R. was India's best customer and has purchashed worth Rs. 3,048 million as compared to Rs. 2,087 million. Among other East European countries which increased their purchases were Bulgaria, Czechoslovakia, Poland and Rumania. Polish purchases were more than doubled-Rs. 442 million against Rs. 199 million. The Czech market increased its imports by 50 per cent - Rs. 460 million against Rs. 304 million. Yugoslavia, however, reduced its intake by half - Rs. 124 million from Rs. 244 million. Hungary and German Democratic Republic also reduced their intake.

The European Common Market countries (excluding U.K.) have also improved their imports from India to the level of Rs. 2,217 million as compared to Rs. 1,238 million. All the ECM markets have shared this rise. The purchases of individual countries were as follows: Belgium Rs. 300 million against Rs. 240 million; France Rs. 455 million against Rs. 241 million; German Federal Republic Rs. 620 million against Rs. 367

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million; Italy Rs. 488 million against Rs. 841 million and Netherlands Rs. 223 million against Rs. 147 million.

The U.K. market which has been India's traditional best customer has been reduced to the third position next only to USSR and USA. Its purchases were, however, up at Rs. 1,719 million as against Rs. 1,681 million. Among the other European Free Trade Area countries, Sweden proved to be an important direction of Indian exports; the Swedish market bought Indian products worth Rs. 151 million as compared to Rs. 60 million. The other EFTA Members, namely, Austria, Denmark, Norway and Switzerland also have improved their off take from India.

In sum, the year 1972-73 proved to be the best year so far in the context of India's export trade from the points of view of foreign exchange earning, quantitative improvement and diversification of the directional and compositional patterns. For a number of export products the unit values recorded were far higher than in the preceding years. Another facet of the trade in the year was in relation to strengthening overseas supplies of quite a few non-traditional manufactured goods. It is indeed creditable that the country's export performance looked up in the year under review notwithstanding various adverse factors, both on the supply front and on the demand side. ☐

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DIAN CARS TO MAURITIUS

Automobile industry is the leading sector of India's gineering industry. During 1972-73, India-manufaced road motor vehicles earned foreign exchange ivalent to nearly Rs. 160 million against Rs. 149 lion in 1971-72.

In 1972-73, trucks and lorries constituted the ding area of sizeable export earning which brought Rs. 36.36 million. In terms of quantity, 783 numbers e supplied abroad. Bangladesh emerged as the most buyer which imported 388 numbers valued at 17.83 million. Nepal, Arab Republic of Egypt, goslavia, Sri Lanka, Nigeria and Saudi Arabia were minent among other buyers.

Next to lorries and trucks, motor vehicle initial ipment was another significant export item dur- the year. It earned foreign exchange amounting Rs. 30.63 million. Arab Republic of Egypt, Nigeria, goslavia, Nepal, Sri Lanka, Kuwait, Iran, Singapore, dan and Tanzania Republic were the leading tomers. Engine mounted chassis for tractors includ- other chassis together netted Rs. 29.75 million while jeeps and landrover type of vehicles secured Rs. 6.15 million. Sri Lanka, Arab Republic of Egypt and Yugoslavia were the main customers for engine mounted chassis for tractors while Sri Lanka and Bangladesh were the principal customers for jeeps and landrover type of vehicles.

Besides these significant export items, the export value of other vehicles and parts during the year under review was: auto rikshaws Rs. 5.86 million; special purpose lorries Rs. 4.73 million; motor vehicle replacement parts Rs. 1.44 million; road tractors Rs. 1.13 million and motor vehicle replacement parts Rs. 17.45 million.

Motor cycles, motor scooters, tractor parts, engine mounted chassis for passenger motor cars and motor cars were the other items active in export trade.

Among a large number of automobiles and auto parts and ancillaries manufacturing units in India, M/s. Premier Automobiles Ltd , Construction House, Wittet Road, Ballard Estate, Bombay, has earned a reputation for securing sizeable foreign exchange earning every year. Recently, it secured a contract from Mauritius for the supply of 12 'Premier President' cars to that country. The first consignment of six cars has already been despatched and the remaining cars are to be shipped shortly. The firm has exported six Premier airtemp airconditioners also to Mauritius. The vehicles manufactured by them are popular in Eastern and West Asian countries.

Though, till recently, the firm manufactured commercial vehicles in collaboration with foreign firms, it is now turning out these vehicles with indigenous parts and components, saving considerable outgo of foreign exchange every year. It has active plans for expansion of its installed capacity. It is, in fact, awaiting the Government's approval in this regard. During the last two decades, India's automobile industry has developed technical expertise and know-how to manufacture a variety of commercial vehicles catering to rapidly changing requirements of users at home and abroad. The broad range of manufactures today includes trucks, buses, lorries, motor cars, jeeps, scooters, tractors, and almost a complete range of ancillaries and parts. Production of the industry is also rising year after year. The output of commercial vehicles which was of the order of 24,800 numbers in 1961 rose to 37,460 numbers in 1972 while car production almost doubled from 21,660 numbers to 40,040 numbers. In the case of other vehicles too, production has registered significant increase. For instance, the output of motor cycles rose from 8,640 numbers (1961) to 47,560 numbers (1972); mopeds and scooterettes from 2,635 numbers to 21,610 numbers; three wheelers from 1,270 numbers to 9,790 numbers and scooters from 12,820 numbers to 64,330 numbers.

WOOLLEN HOSIERY EXPORTS EARN MORE

Next to carpets, druggets, and numdahs, woollen hosiery products constituted the second best category which contributed to the export growth of wool and woollens to a record level of Rs. 480 million during 1972-73. Valued at over Rs. 168.80 million, the exports of hosiery items during the year (1972-73) improved by Rs. 24 million compared to that of the preceding year at Rs. 144.80 million.

During the year under review, U.S.S R. ret its position as the topmost buyer of woollen ho having improved its intake to Rs. 135.30 million Rs. 117.80 million. Poland, the second leading nation, multiplied its offtake manifold at Rs. 14 from Rs. 2 65 million. Czechoslovakia was yet an important buyer. Its purchases improved to R million from Rs. 8.6 million. Among free cur markets, Libya was the leading purchaser. H Kuwait and Malaysia were the only markets w supplies of Indian woollen hosiery suffered a decl 1972-73. Nigeria and Saudi Arabia, however, eme as new destinations, though their purchases were li to Rs. 900,000 and Rs. 390,000 respectively.

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Adding to the export effort of hosiery, sector of the woollen industry a manufacturer in the line, M/s. Nagesh Hosiery Mills, Sant Dass Street, Ludhiana, have succeeded in improving their exports. Set up in 1951-52, the firm entered the export field only in 1964 when they secured an order worth Rs. 100,000 from M/s. Centrotex of Czechoslovakia, and another from M/s. Exportljon of Russia for supply of knitted cloth. By 1970, the firm was able to bag an award for its outstanding export performance at Rs. 5.6 million for the year 1969-70. The export earning of the firm now stands at Rs. 12 million per year. Their product range includes all types of woollen outer knitwears, woollen under-wear knitwears, socks and shawls.

HARDBOARDS ACTIVE ON EXPORT FRONT

Among paper, paperboard and manufactures that India supplies to overseas markets, fibre boards and other building boards of wood pulp occupy a significant place. During 1971-72, the foreign exchange earning of these boards was equivalent to Rs. 2.40 million while in the first three quarters of the following year (April-December 1972), the exports amounted to Rs. 1.86 million. Total export of paper and paperboard were of the order of Rs. 16.70 million during the same period.

Hardboards of wood fibre constitute the major item of sizeable earning in the entire export value of paperboard. During 1971-72; foreign exchange earning of this item alone amounted to Rs. 2.31 million while during April-December 1972, these exports secured Rs. 1.80 million. Saudi Arabia, Qatar, Dubai, Kenya, Kuwait, South Yemen Peoples Republic and Bahrein Islands were the prominent buyers during 1971-72 while Iraq, Qatar, Saudi Arabia, Sri Lanka, Yemen Arab Republic and Bangladesh were the significant markets during 1972-73 (April-December). Insulation boards and other fibre boards were also exported during the periods under review. Saudi Arabia, Indonesia, Nepal and Sri Lanka were the important customers.

Contributing to the export endeavour of the paper and paperboard industry, M/s. Anil Hardborads, 1st Floor, Laxmi Insurance Building, Sir Pherozshah Mehta Road, Fort, Bombay-1, exported hardboard and its bye-products at a value of Rs. 3 million during 1972-73. In fact, the firm stepped up its export turnover to this level from Rs. 1.6 million during the preceding year. Additionally, the firm has on hand export orders amounting to Rs. 6 million. Their products are sought by a number of markets abroad including the developed ones.

The firm's range of manufactures includes hardboard and its allied products. It has a licensed capacity of 12,000 tonnes per annum and has applied for expansion of its present capacity to 25,000 tonnes a year.

In the organised sector, India's annual installed capacity of 0.92 million tonnes of paper and paper boards was spread over 59 units during 1972 and the actual production was estimated at 0.80 million tonnes. In the preceding year, the same number of units with an installed capacity of 0.88 million tonnes had a production of 0.77 million tonnes.

STAPLE FIBRE PLANT TO THAILAND

The Engineering Division of M/s. Gwalior Rayon Silk Manufacturing (Weaving) Company Limited, P. O. Birlagram, Nagda (Madhya Pradesh), is to supply plant and machinery for a staple fibre plant to be set up in Thailand. The firm is also to supply its counterpart in Thaliland, process know-how for the project for a period of 7 years. It is reported to be investing in the equity of the concerned foreign company to the tune of Rs. 7.5 million by way of plant and machinery.

Apart from this contract, the Nagda firm is exploring possibilities of entering into collaboration with leading machinery manufacturing establishments abroad to undertake manufacture of specialised and sophisticated machinery and equipment for man-made fibres. At domestic level, the firm's Engineering Division is currently engaged in fabrication of plant, machinery and equipment for M/s. South India Viscose for the manufacture of 20 tonnes of staple fibre per day.

The firm's installed capacity for viscose staple fibre is of the order of 78,000 tonnes. In the area of chemicals, installed capacity in respect of different chemicals is: sulphuric acid 68,500 tonnes; carbon disulphide 13,500 tonnes and sodium sulphate 32,300 tonnes. Lately, the firm's installed capacity for the manufacture of rayon grade pulp has been increased from 54,000 tonnes to 72,000 tonnes. Their range of products broadly covers staple viscose fibres, rayon grade pulp, synthetic fibres, cotton textiles, blended fabrics, rayon and allied chemicals such as, sodium sulphate, sulphuric acid and carbon desulphide.

During 1972-73, the firm increased its production of staple fibre to 68,802 tonnes from 59,221 tonnes, while the production of rayon grade pulp rose to 63,237 tonnes from 42,493 tonnes. The firm's chemical plant attained full capacity within three months of commissioning and produced 12,500 tonnes of caustic soda till March 1973. It has applied for licence for setting up a plant for the manufacture of polynosic/staple fibre, having a capacity of 100 tonnes per day and 33,000 tonnes of caustic soda per annum.

At present, in India, there are seven firms licensed for the manufacture of rayon and synthetic fibre plant and equipment. Of these, two units are engaged in the manufacture of complete rayon plants. Two units have been licensed for the manufacture of synthetic fibre plants. The rest of the units are licensed to manufacture items like spinnerettes, aluminium cops and bobbins.

MALAYSIAN ORDER FOR BOILER

India supplies different types of boilers to the overseas markets. The range covers central heating boilers and parts (except steam generating), domestic boilers, steam generating boilers and parts and boiler house plants. Exports of steam generating boilers and parts from the country, amounted to Rs. 6.60 million in 1971-72. Malaysia was the biggest importer and Singapore, Iraq, Uganda and Arab Republic of Egypt were prominent among other buyers. In the same year, Uganda was the sole purchaser of boiler house plant.

During the first three quarters of 1972-73 (April-December 1972), these exports earned Rs. 4 million. In this period too, Malaysia imported the bulk of supplies. Sudan was the next important buyer.

The popularity of India-made boilers in Malaysia has once again been proved by M/s. Bharat Heavy Electricals Ltd., Tiruchirapalli, in the public sector, who have recently succeeded in securing the third consecutive order from National Electricity Board of the states of Malaya to design, manufacture, erect and commission a 30 M. W. boiler (300,000 lbs. per hour) and ancillary plant for the Sultan Ismail Power Station in Malaysia.

Valued at about Rs. 4 million, the order has been won creditably against stiff competition from advanced countries like Japan, U. K. and Federal Republic of Germany. This will be the sixth boiler to be imported by Malaysia while for BHEL it will be the third order in the series from the same customer.

Of the earlier two contracts secured by BHEL from Malaysia, the first one, concluded more than three years back, related to the supply of two 60 M. W. boilers for Tuanku Ja'afar Power Station-Stage II. The first of these boilers has been recently commissioned and connected to the grid. The second 60 M. W. boiler under the same contract is reported to be ready and is awaiting commercial operation. The second contract which was secured by BHEL more than a year back pertained to the supply of 3 numbers of 120 M. W. boilers for the same station - Tuanku Ja'afar Power Station (Stage III) - is proceeding according to the schedule and these boilers are expected to be commissioned in 1975 and 1976.

With the addition of the third order now secured by the BHEL, the total value of the contracts being executed by the BHEL for the National Electricity Board of the states of Malaya is around Rs. 12.5 million. Due to its success in achieving three orders over a period of less than four years, BHEL has earned a reputation in Malaysia as a manufacturer of high quality boilers.

EXPORT UPTREND IN ELECTRICAL MACHINERY

India's export trade in electric machinery, apparatus and appliances has improved to the level of Rs. 234.30 million during 1972-73 as compared to only Rs. 186.74 million during 1971-72. The export rise was in respect of the different categories of electrical machinery, excepting telecommunication apparatus which witnessed a marginal decline.

The most important category of items exported in the electrical machinery group relates to the equipment for distributing electricity. The export value of this group was up at Rs. 66.57 million as against Rs. 54 million in the comparable year. In this group, insulted wire cables were supplied to the level of Rs. 63.89 million during 1972-73. Enamelled copper winding wires, insulated copper winding wire cables, plastic insulated wires and other insulated cables as well as plastic insulated cables and flexes were the principal categories exported in the group. The major customers for the cable exports were the West Asian markets, particularly Kuwait, Iraq, Iran, Muscat, Qatar and Dubai. Sizeable supplies were also effected to countries like U.S.S.R., Singapore and Bulgaria. Electrical insulating equipment is another area of export dynamism in electricity distributing equipment group.

Next in importance were the exports of electrical power machinery and switchgears. These exports have risen from Rs. 47.48 million in 1971-72 to Rs. 56.15 million in 1972-73. Electric power machinery including generators, squirrel cage induction motors upto 100 H. P. and above and transformers of varied ratings scecured foreign exchange worth Rs. 30.45 million during 1972-73. Electrical apparatus for electrical circuits, such as, oil circuit breakers, motor starters, motor control gears, switch fuse units, switchboards and control panels and accessories have together earned Rs. 25.70 million. The major importers of generating sets were Sri Lanka, New Zealand and Sudan while those for squirrel cage induction motors include German Federal Republic, New Zealand and Malaysia. The overseas customers for Indian transformers, amongst others, were Malaysia, Malavi and Thailand.

Domestic electric equipment proved to be another category of manufacture which has attracted larger overseas demand during 1972-73. In the year, its export value was of the order of Rs. 30.83 million almost double of the previous year's record at Rs. 15.44 million. In this category are included items like domestic refrigerators, electric fans, domestic room heaters and electro-thermic domestic appliances. Domestic refrigerators and parts have earned about Rs. 2.9 million during the year. Poland was the best market at an import value of Rs. 2.6 million (4785 refrigerator units). In the electric fans group, ceiling fans alone secured Rs. 19 million, the leading importers included Iraq (Rs. 6.9 million), Kuwait (Rs. 4.5 million), Nigeria (Rs. 1.54 million), Sudan (Rs. 1.32 million) and Saudi Arabia (Rs. 1.26 million). Air-circulators, portable blowers, pedestal fans, rail carriage fans and table fans were among the other items exported.

There were also other electrical machinery and apparatus supplied abroad, such as, batteries and accumulators, electric lamps thermionic valves, tubes and the photo-cell transistors, automotive electrical equipment, electrical measuring and controlling instruments, electro-mechanical hand-tools and so on. All these products together secured an export earning of Rs. 51.5 million during 1972-73 as compared to Rs. 39 million in the previous year. In 1972-73, the exports of batteries and accumulators amounted to Rs. 28.4 million while those of electric lamps were of the order of Rs. 3.8 million. The offtake of radio receiving tubes, mainly to German Federal Republic, U. K. and Netherlands, was in the neighbourhood of Rs. 3.2 million.

There was a slight fall in the export trade in the telecommunication apparatus during 1972-73 as compared to the preceding year - Rs. 28.8 million against Rs. 30 million. In this group, radio broadcast receivers constitute the principal category of export and have earned Rs. 21 million in 1972-73. Transistor radio receiver sets alone fetched Rs. 10 million. The leading buyers for these sets were U. K. and Sudan (Rs. 3 million each). The Arab Republic of Egypt, U. K. and Netherlands were among the principal customers for components and parts of radio broadcast receivers. Telecommunication equipment including telegraphic apparatus, telephones, megaphones, loudspeakers and amplifiers secured foreign exchange worth Rs. 7.7 million. The group of telephonic and telegraphic equipment alone fetched Rs. 3.5 million.

DYEING TANNING AND COLOURING MATERIAL FETCHES MORE

Indian dyeing, tanning and colouring materials are in growing demand overseas in recent years. The foreign exchange earning in the line rose to a record level of Rs. 92.65 in 1972-73 from Rs. 54.50 million in 1971-72 after sliding down from 1970-71 when the earning was of the order of Rs. 72.60 million. In 1969-70 the export in the line amounted to only Rs. 40.35 million.

During 1972-73, pigments, paints, varnishes and related materials constituted the major group of sizeable export expansion. Its export earning increased to Rs. 45.57 million as compared to Rs. 28.45 million in the previous year. A similar export growth was also witnessed by another group of synthetic organic dyestuff, natural indigo and colour lakes, which secured foreign exchange worth Rs. 45.20 million in 1972-73 as against Rs. 24.78 million in 1971-72. Dyeing, tanning extracts and synthetic tanning materials was one more group active in exports during the year and fetched more at Rs. 1.86 million as against Rs. 1.25 million.

In the group of pigments, paints, varnishes and related materials, synthetic enamels constituted the largest single item of sizeable export earning. It secured as much as Rs. 17.75 million. USSR was the leading buyer which imported the bulk at a cost of Rs. 15.90 million. In terms of quantity, it bought 2.80 million kgs. Arab Republic of Egypt, Iran, Bangladesh, Abu Dhabi and Kuwait were prominent among other buyers.

Varnishes, the next best item in terms of value brought in Rs. 11.10 million (1.85 million Kgs). Here again USSR topped the list of buyers, having absorbed the major portion valued at Rs. 10.41 million (1.62 million Kgs.), followed by Nepal.

Besides these major leading items, export value of other items in the group was : prepared inorganic pigments Rs. 2.80 million; printer's colours Rs. 1.23 million; prepared organic dyestuff pigment dry Rs. 1.30 million; artists colours Rs. 1.28 million and ready mixed paints Rs. 1.20 million. USA, USSR, Netherlands, Philippines, Hong Kong, Bangladesh and Thailand were the major customers. Other paints were also supplied overseas to fetch Rs. 5.10 million. These were mainly imported by Nepal at Rs. 3.58 million (0.79 million Kgs.). USSR, Iran and Kuwait were the other significant markets.

In the group of synthetic organic dyestuff, natural indigo and colour lakes, direct and sulphur dyes was the major area of sizeable export growth which brought in Rs. 11.25 million while vat dyes secured Rs. 8.90 million. In the same group, lakes solvent dyes organic pigments was yet another line of active exports having earned Rs. 7.93 million while reactive and azoic dyes were supplied overseas to fetch Rs. 6.10 million. The export earning of other categories in the group was : Basic dyes Rs. 4.44 million; acid dyes Rs. 3.36 million; disperse dyes Rs. 0.25 million and other organic synthetic dyestuff Rs. 1.97 million.

Netherlands, USA, Japan, Iran, Singapore, UK and Hong Kong were the significant buyers of direct dyes and sulphur dyes while USA, Arab Republic of Egypt, Netherlands, Argentina, Uganda, Kenya, Switzerland and Turkey were the prominent customers for vat dyes. Lake solvent dyes organic pigments were mainly imported by USA, Hong Kong, Federal Republic of Germany, USSR, Argentina and Switzerland and for reactive and azoic dyes, Japan, USA, UK, Arab Republic of Egypt and Federal Republic of Germany were the main customers.

Dyeing tanning extracts, including cutch extracts, food colours, tanning extracts of vegetable origin (Gambier extracts), myrobalan fruit extract and wattle extracts were mainly supplied to France, Federal Republic of Germany, Hungary, New Zealand and Singapore.

CASHEW KERNEL EXPORTS

Exports of cashew kernel from India during the first half of 1973 (January to June) amounted to 24,675 tonnes valued at Rs. 268 million. Exports during the corresponding period in 1972 were 29,635 tonnes valued at Rs. 299.70 million. The fall in exports is mainly due to the lower offtake by U.S.S.R. Exports to U.S.A., on the other hand, registered an increase. It imported 11,560 tonnes against 7,015 tonnes and U.S.S.R.

purchased 6,035 tonnes and 13,940 tonnes in the respective periods. Canada and U.K. were the major markets.

Exports of cashewnut shell liquid during the period under review (January-June, 1973) were of the order of 1,735 tonnes valued at Rs. 1.90 million as against 1912 tonnes valued at Rs. 2 24 million during the corresponding period in 1972. U.K. the best buyer reduced its intake from 1400 tonnes to 815 tonnes. Japan, however, purchased more at 518 tonnes against 308 tonnes while U.S.A., absorbed 302 tonnes years 61 tonnes.

Imports of raw cashewnuts into India during the period amounted to 80,356 tonnes valued at Rs. 128 million as against 113,050 tonnes valued at Rs. 181.70 million during the corresponding period in the previous year.

EXPORT POSITION OF UNMANUFACTURED TOBACCO

India's exports of unmanufactured tobacco secured foreign exchange at a value of Rs. 397.40 million during the first five months of 1973-74 (April-August 1973). In terms of quantity over 39 million kgs. were supplied to overseas markets. In the same period, tobacco products secured over Rs. 7 million.

Destinationwise, in the period of review, United Kingdom was the leading buyer of unmanufactured tobacco which bought 18.39 million kgs. valued at Rs. 217 million, accounting for more than 58 percent of the entire export earning. U.S.S.R. constituted the next best importing country, having purchased 6.89 million kgs. for Rs. 73.60 million. Japan was yet one more destination of sizeable intake. Its imports totalled 4.46 million kgs. at a value of Rs. 47.65 million. The import value of other significant destinations was: Irish Republic Rs. 21.10 million (1.62 million kgs); Bangladesh Rs. 17.97 million (3.64 million kgs); Libya Rs. 6.30 million (0.54 million kgs); Czechoslovakia Rs. 3.42 million (0.34 million kgs); Belgium Rs. 1.90 million (0.37 million kgs) and Netherlands Rs. 1.48 million (0.36 million kgs).

In the group of tobacco products, cigarettes brought in Rs. 4.70 million while blended cut rags secured over Rs. 1 million. Hookah tobacco, snuff and bidis were the other items active in exports.

Considering the need to keep abreast of the export oriented methods of production and marketing on the lines of other tobacco producing countries in the South East Asia, the Tobacco Export Promotion Council, Madras is shortly sponsoring a study team to South Korea, Philippines, Thailand and Japan to study their production and marketing techniques to see how best India could utilise these. The area under tobacco crop in the country during 1971-72 was placed at 445,000 hectares which was more or less the same as in the preceding year.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

TRENDS IN INDIAN ECONOMY

The Indian economic scene during 1972-73 (July '72 to June '73) was characterised by a severe pressure on the general price level. The upsurge in the price level was, no doubt, consequent to a set-back in food production for two successive years, but an important contributing cause was an excess demand in the economy, according to the Annual Report of the Reserve Bank of India for the year. The price rise was due partly to the large increases in domestic expenditure, especially by the Government. Total spending by the Central and State Governments in 1972-73 amounted to Rs. 119,420 million—13.6 per cent more than in 1971-72. A sizeable part of the increase in expenditure was unforeseen, such as disbursement of drought relief and emergency agricultural programmes. Simultaneously with expansion in Government spending, expenditure in private sector also grew as a result of larger money incomes. The overall price index witnessed an unprecedented rise of 21.5 per cent during the year 1972-73 (July-June).

Since the inflow of foreign resources is estimated to be less than in 1971-72, the ratio of aggregate net investment to national income remained stagnant. In other words, aggregate net investment increased more slowly than domestic saving. As compared to 1970-71, and 1971-72, the net domestic saving increased as per cent of National Income only to the level of 11.7 per cent in 1972-73 against 10.6 per cent and 11.3 per cent in the preceding two years. The inflow of foreign resources in these three years was 1.1 per cent, 1.3 per cent and 0.9 per cent respectively. Thus the investment position in these years was 11.7 per cent, 12.6 per cent and 12.6 per cent respectively of the national income.

Concurrently, with the domestic developments, the International Monetary system continued to bristle with uncertainties. The pressure on the U.S. $ continued unabated, culminating in its devaluation, for the second time in February, 1973. Several of the world's major currencies including the Pound Sterling continued to float and in such a situation, the progress towards the creation of a viable monetary system has been slow. The Rupee maintained its rate of exchange with the Pound Sterling and currencies linked with it and has depreciated in relation with most European currencies and the Japanese Yen. It appreciated vis-a-vis the U.S. $ and currencies linked with it.

It would be difficult to assess precisely the extent to which these changes have affected India's balance of payments. The trade data supplied by the Commerce Ministry revealed a marginal decline in imports while remarkable dynamism was experienced in exports. The increase in exports was led by the traditional items like cotton textiles, jute goods, hides and skins and tobacco, stimulated by increase in world demand for them. It also extended to engineering goods. Because of these circumstances, there was a trade surplus for the first time in many years. The debt service burden was lightened by the re-scheduling arrangements worked out with the Aid India Consortium. In all, India's foreign exchange reserves during 1972-73 showed an estimated increase of Rs. 370 million compared to that of Rs. 580 million in the previous year. It may, however, be noted that in 1971-72, the reserves benefitted from an allocation of Rs. 750 million worth of SDRs (Special Drawing Rights), while there was no such allocation in 1972-73. Rupee values of some of the foreign currency assets held in reserves have also appreciated consequent to exchange rate adjustments. Making an allowance for these factors, the rise in reserves during 1972-73 worked out to Rs. 20 million as compared to the decline of Rs. 330 million in 1971-72.

The national income growth in 1971-72 and 1972-73 was less than 2 per cent. This compares with the increase of 7.3 per cent and 4.6 per cent in 1969-70 and 1970-71 respectively. The target rate of average growth envisaged in the Fourth Five Year Plan period is 5.5 per cent. The low improvement in the growth of national income is principally attributable to the unsatisfactory performance of commodity sectors. For the second year in succession, agricultural output suffered for want of favourable weather conditions in many parts of the country. The output of foodgrains during 1972-73 was of the order of 100 million tonnes as against 104.7 million tonnes in 1971-72. While the output of wheat is likely to be somewhat higher (26.5 million tonnes) than in 1971-72, that of rice is expected to show a decline from 42.7 million tonnes in 1971-72 to about 40 million tonnes in the year that followed. Output of coarse grains and pulses, as also of various other commercial crops are estimated to be smaller in 1972-73, although sugarcane production is expected to be higher.

The position regarding the output of commercial crops was also not satisfactory. Raw cotton output which touched the record level of 6.5 million bales in 1971-72 is expected to be 6.2 million bales in 1972-73. Production of jute and mesta estimated at 6.1 million bales during 1972-73 was lower than the previous year's level of 6.8 million bales. Output of five major oilseeds which declined by 1 million tonnes in 1971-72 to 8.3 million tonnes, declined further to about 7 million tonnes in 1972-73, mainly due to shortfall in groundnut output.

In the industrial sector, however, there was a welcome reversal in the growth rate of output. In 1972, the growth rate was 7.1 per cent as against 2.9 per cent recorded in 1971 and 4.8 per cent in 1970. All the same, it was still below the targetted growth rate of 8 to 10 per cent postulated in the Fourth Five Year Plan.

Industries which showed marked improvement were cotton spinning, mining and quarrying, iron and steel, railroad equipment, and fine and pharmaceutical chemicals. Among industries which showed moderate increase were cotton textiles, food manufacturing and cement. Industries with nominal decline of less than 5 per cent included motor vehicles, non-metallic mineral products and communication equipment. Industries where the decline was more than 5 per cent included cigarettes and miscellaneous manufacturing sectors.

Several factors contributed to the overall improvement in the industrial output in 1972. First, better supply position of raw cotton and raw jute assisted larger production of textiles which have a weightage of 27 per cent in the index of industrial production. Likewise, steel using industries benefitted from a 4 per cent increase in the output of steel from both public and private sector steel plants as well as imports. Secondly, larger investments in various industries led to a higher demand for cement and other construction materials, transport services and certain investment goods. Thirdly, selective liberalisation of industrial licensing policy appears to have encouraged industrial activity. Lastly, the improvement in industrial relations in 1972 in certain key sectors that occured had probably a favourable impact on industrial capacity utilisation.

There has been, however, under utilisation of capacity in some industries like railway wagons, winding machinery, steel casting machine tools and heavy structures. This has in most cases stemmed from continued sluggish demand for their products. Utilisation of capacity in the motor vehicle group was affected by paucity of supplies from ancillary units, caused by labour strikes and inadequate supply of inputs.

Despite the set-back suffered in the early part of 1973, there are possibilities of continuation of the growth rate of 7.1 per cent recorded in 1972. The realisation of this possibility depends on favourable monsoon and on consequential improvement in the supply position of power and of raw materials like raw cotton, raw jute, oilseeds and sugarcane. In respect of industrial raw materials, the need for specific measures to augment supplies and keep down costs is being fully recognised.

Detailing the trade balance position, The Reserve Bank Report revealed that a trade surplus of Rs. 1850 million was recorded by India during 1972-73 (April-March) in contrast to a trade deficit of Rs. 2180 million in 1971-72. This surplus was due to sharp increase (Rs. 3550 million) in exports and a decline (Rs. 480 million) in imports. Imports during 1972-73 declined to Rs. 17,770 million as compared to a sharp rise to Rs. 18,250 million in 1971-72 from Rs. 16,340 million in 1970-71. Exports on the other hand, at Rs. 19,620 million during 1972-73 recorded an increase of 22.1 per cent as compared to a rise of 4.7 per cent during 1971-72. A combination of factors helped this appreciable growth in exports in 1972-73. The emergence of Bangladesh as a new market for Indian exports accounted for some increase. But a major part of the increase was due to a buoyancy in foreign demand for Indian goods, especially for traditional items like hides, skins and leather, cotton textiles and marine products. This was also reflected in higher unit values. In addition, larger rupee realisation arising from the depreciation of the rupee in terms of several important currencies was reflected in the improvement in export earnings.

INDIA'S PROGRESS IN WAGON BUILDING

India's progress in wagon manufacture during the last two and half decade has enabled the country to meet the bulk of the domestic requirements as well as book supply orders from overseas markets.

During 1972-73, India's total production of wagons was of the order of 10,834 numbers. For 1973-74, the turnover is estimated at 13,000 wagons. Of this, the Railway Workshops in the public sector are estimated to manufacture about 2,500 numbers while the wagon building units in the private sector are estimated to produce another 10,500 wagons. The annual requirements of the Indian Railways during the Fifth Five Year Plan (1973-74 to 1978-79) have been assessed at about 20,000 to 25,000 wagons, depending upon the freight traffic targets to be finalised by the Railways.

Wagon building industry in the country is comprised of Railway Workshops in public sector and private sector units. Currently, there are three workshops in the public sector and sixteen units in the private sector. However, five private sector units are at present closed. Attempts are being made to take over two of the closed units.

The Railways have undertaken a number of other steps to gear up wagon production in the country. Sufficient advance orders are being placed for at least three years. Active steps are being taken to import matching steel to bridge the gap between indigenous availability and actual requirements. Besides, some items, such as wheel sets, roller bearings, axle boxes, centre buffer couplers, bogie and air brakes are supplied to wagon building units to match their production. Additionally, the Government of India is attempting to revive production in a number of sick and closed wagon units in the private sector. The Railways would provide technical and managerial assistance wherever necessary.

The Indian Railways have a fleet of about 500,000 wagons at present. All efforts are made to ensure that the largest number of wagons are available for traffic, and least number of wagons is kept under repairs.

Owing to accurate technical expertise and skill developed by the Indian industry in this line of manufacture, India-built wagons are being absorbed in large quantities by the markets world over. The notable supplies effected in the recent past include 120 covered wagons and 113 coaches to Taiwan, 1000 wagons to Hungary, 150 wagons to Ghana, 45 coaches to Thailand, 120 bogie wagons to Sudan and 100 tank wagons to East Africa. Lately, a part of export order for 500 covered wagons to Poland, has been executed and the remaining supplies are to be effected shortly. A substantial export order for supply of 1300 covered wagons and 2300 open wagons to Yugoslavia is also under execution. The orders on hand include 492 wagons for Iran, 45 wagons each for Iraq and East Africa, 43 for Sudan and 40 wagons for Sri Lanka. Yet, one more order for supply of seven Railway coaches has been secured by the industry from Zambian Railways. This order was bagged by M/s. Integral Coach Factory, Guindy, Madras, in the face of stiff global competition. Wagon exports have been canalised through the Projects and Equipment Corporation (PEC), a subsidiary of the State Trading Corporation (STC), since August, 1972.

PROGRESS IN MINERAL EXPLORATION

India's eastern region is reported to account for more than fifty per cent of the country's total mineral output. It has about 20,000 million tonnes of proved reserves of rich and exclusive minerals, estimated to be capable of meeting the requirements of the country for a number of decades. The region possesses vast reserves of base matals according to the Geological Survey of India. The range of these deposits includes nickel and cobalt deposits, copper, varadiferous magnetite ore (a significant metal for defence purposes), coal and iron ore, asbestos bauxite, chromite, mica and traces of gold.

In the field of base metals, the country's only copper mines namely Mosaboni, Badia, Surda and Pathergora are located in Bihar over an area of 128 kilometers spread from Duarapuram in the west to Bahargora in the South-Cast. The total base metal reserves in this region have been estimated at over 104 million tonnes. The vigorous efforts made during the last decade have lead to the discovery of about 98.50 million tonnes of proved copper-ore reserves with an average grade of 1.5 per cent in Bihar. This is capable of sustaining copper production of the order of 30,000 tonnes of the metal for a period of more than 30 years. Copper ore is also associated with recoverable quantities of nickel and molybdenum.

Extensive drilling operations in the sargipali area of the Orissa State have indicated reserves of lead ore amounting to 5.6 million tonnes containing metal content of 5.75 per cent. A zone of lead, zinc and copper mineralisation was also indicated in the Darjeeling District of West Bengal. Analytical results of samples indicated traces of over 2 per cent of lead, 1.7 per cent zinc and 1.5 per cent copper. Eastern India has also sizeable reserves of China clay. Of this, West Bengal accounts for 179 million tonnes, Assam 3.5 million tonnes and Bihar 234,000 tonnes. In Orissa, only 2,800 tonnes of China clay have been located so far.

Orissa possesses vast reserves of iron ore while Bihar and Orissa are rich in bauxite and chromite. The entire proved reserve of 243 million tonnes of dolomite is located in Jalpaiguri district of West Bengal. Glass sand reserves have been mostly found in Bihar, Assam and Tripura with total proved reserves of 6.71 million tonnes. Bihar is reported to possess the largest reserves at 5.10 million tonnes in Singbhum District. The reserves have 9 per cent silica.

Graphite deposits have been located only in Orissa and Arunachal Pradesh while limestone deposits mainly occur in Assam, Arunachal and Bihar, Pyrite deposits to the tune of 20.91 million tonnes with 41.85 per cent content of sulphur have been estimated in Shahbad District of Bihar.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

FROG OIL FOR LEATHER TREATMENT

The Central Leather Research Institute (CLRI), Madras, is reported to have evolved a technique of extracting oil from carcass of frogs, the left over portion of frogs after separation of their legs for export purpose. Frog oil is found to be a superior substitute to the odoriferous fish oil presently being used for leather treatment.

The process of extracting frog oil involves crushing of carcasses of frogs, which hitherto used to go as waste after separating their legs. The frog oil is free from bad smell and as such, can replace fish oil which gives bad smell to leather handbags, shoes and other articles of leather. Forg oil developed by CLRI is likely to be universally accepted as an effective substitute for fish oil in leather treatment.

The CLRI scientists have also exploited frogs' crusty skin for making fancy leather goods which in the world of fashion ranks next best to only crocodile leather items.

The Madras Institute has become a trend setter in fashion having evolved a whole new range of specialities described variously as wet-book, tie-and–dye, buttery type and hair on leather in which natural fluffy hair on the animal skin is retained to provide glamour. Interestingly, one such hair on leather is made out of rat skin. It has great appeal in Korea where they use it as jacket fringes. CLRI has found even tail skin of even bandicoot to be one of the best materials for luxury wallets and elegant wrist watch-straps.

MICROCRYSTALLINE WAX FROM CRUDE OIL

Based on the process developed by the Indian Institute of Petroleum (IIP), a Rs. 1.7 million microcrystalline wax plant has been set up at Ankleshwar oilfield by the Oil and Natural Gas Commission (ONGC). After completion, the plant is estimated to produce about 1000 tonnes of microcrystalline wax every year. This is expected to save for the country foreign exchange to the tune of Rs. 10 million.

The wax developed by the IIP is of a high quality and is mainly used in pharmaceuticals, petroleum jelly, paper coating, paper and carbon paper ink, cosmetics, leather treating, textile water-proofing and printing, rust preventives, phonograph records, electrical insulation and for the manufacture of a number of other products.

The process developed by the IIP involves recovering and purifying microcrystalline wax from the bottom sediments accumulated in the crude oil storage tanks. This is a waste material obtained during the process of producing and pumping out crude oil. The pilot plant studies were conducted in Ankleshwar tank sediments in the IIP's laboratory at Dehradun. The accumulated tank bottoms are melted, thereby removing water and sediment by setting. The lighter fractions such as naphtha, kerosene and gas oil are removed by distillation under vaccum and then the residue is treated with 98 per cent sulphuric acid to remove aspheltic matter. After removing the acid sludge, the acidified wax is treated with sodium carbonate and clay for neutralisation and decolourisation and finally filtered through a pressure filter. The molten wax is ,then passed through flaking machine to get microcrystalline wax in the from of flakes.

The microcrystalline plant has a capacity of processing 3500 tonnes of tank sediments. The Ankaleshwar and Koyali refineries are to feed tank sediments to the plant.

The microcrystalline wax obtained from the Ankaleshwar tank bottoms has a high melting point of 90°C to 92°C and is claimed to be at least equal to grade 195-M with a melting point of 88°C which is being impored by M/s. Indian Oil Corporation (IOC). IIP is currently engaged in conducting research on crude oil tank sediments of other oil fields for obtaining this wax.

COMPOSITION OF INDIA'S EXPORT TRADE

(In Million Rupees)

Export Product	**1971-72**	**1972-73**
Fish and Fish Preparations	413.95	537.95
Meat and Meat Preparations	13.80	34.70
Cereal and Cereal Preparations	293.20	769.90
Fruits and Vegetables	**703.50**	**811.55**
(a) Fresh Fruits and Nuts	634.70	727.10
(b) Fruits Preserved and Fruit Preparations	18.35	29.45
(c) Vegetables	47.45	52.35
Sugar and Preparations and Honey	311.30	139.15
Coffee	220.70	329.30
Tea and Mate	1563.15	1472.95
Spices	361.75	291.30
Feeding Stuff for Animals	439.65	790.70
Unmanufactured Tobacco	422.45	610.70
Tobacco Manufactures	28.35	28.00
Textile Fibre and Waste	367.70	379.80
Metalliferous Ores and Metal Scraps	1210.35	1259.70
Petroleum and Petroleum Products	105.00	288.00
Fixed Vegetable Oils and Fats	75.75	246.25
Chemical Elements and Compounds	**71.75**	**76.45**
(a) Organic Chemicals	33.30	28.30
(b) Inorganic Chemicals	38.45	48.15
(c) Dyeing, Tanning and Colouring Materials	54.50	92.65
(d) Essential Oils and Perfume Materials	87.10	100.15
(e) Medicinal and Pharmaceutical Products	96.25	103.20
Leather and Leather Manufactures (Excluding footwear)	907.65	1745.10
Paper and Manufactures	29.40	41.60
Textile Yarn, Fabrics and Related Products	**4288.10**	**4570.55**
(a) Jute Manufactures (Excluding twist and yarn)	2632.85	2472.00
(b) Cotton Manufactures (Excluding yarn and thread)	1000.55	1267.10
(c) Textile Yarn and Thread	281.20	371.00
(d) Floor Coverings and Tapestries (other than cotton and jute)	197.70	267.00
(e) Woven Textile Fabrics	135.95	155.75
Pearls, Precious and Semi-Precious Stones	515.15	779.30
Glass and Glassware	14.45	27.90
Iron and Steel	408.70	417.55
Non-Ferrous Metals	79.90	83.35
Machinery other than Electric	241.60	293.60
Electrical Machinery, Apparatus and Appliances	186.75	234.30
Machinery and Transport Equipment	**309.40**	**315.25**
(a) Railway Vehicles	69.40	39.60
(b) Road Motor Vehicles	149.35	159.90
(c) Road Vehicles other than Motor Vehicles	73.25	104.70
Clothing	376.70	560.15
Footwear	117.60	128.60
Scientific, Medical, Optical, Measuring and Controlling Instruments and Apparatus	16.50	33.25
Developed Cinematographic Films	50.15	54.00
Total including other items (excluding re-exports)	**16031.50**	**19544.50**

Source : Director General of Commercial Intelligence and Statistics, Calcutta.

PROFILE OF FERTILIZER INDUSTRY

Expansion of fertilizer industry is accorded high priority in Indian economy. Production base for the industry is being strengthened every year. In 1973-74, the likely output is placed at 1.2 million tonnes of nitrogen and 0.4 million tonnes of phosphatic fertilizers.

The average consumption per hectare of three fertilizer varieties is 9.73 kgs. for nitrogenous (N), 3.13 kgs. for phosphatic (P_2O_5) and 1.67 kgs. for potassic (K_2O) types. The present requirements of fertilizers are met both from indigenous production and imports. The import bill was valued at Rs. 895 million in 1971-72 and Rs. 1210 million in 1972-73.

The principal nutrients manufactured by the industry in India are nitrogenous and phosphorous, both in the form of straight and complex fertilizers, such as, urea, calcium ammonium nitrate, ammonium chloride, ammonium phosphate, di-ammonium phosphate, nitrophosphates, single and triple super phosphate and NPK. Straight phosphatic fertilizers are not being manufactured due to indigenous non-availability of raw materials. The nitrogenous fertilizer industry is the most important sector followed by phosphatic fertilizers, both from the angle of nutrient tonnage and capital investment. The large share of the installed capacity is accounted for by the public sector. There are 15 large scale fertilizer plants with an installed capacity of 1.46 million tonnes (N) of which 824,000 tonnes is in the country's public sector. Actual installed capacity of phosphatic fertilizers is of the order of 292,000 tonnes. This, however, excludes 208,000 tonnes of P_2O_5 for single super phosphate variety.

The fertilizer factories in production include the Sindri, Nangal, Trombay, Namrup and Gorakhpur Units of the Fertilizer Corporation of India with a combined capacity of 376,000 tonnes of N and 46,000 tonnes P_2O_5. Neyveli Lignite Corporation Ltd. (70,000 tonnes of N); Fertilizers and Chemicals Travancore Ltd. (FACT), Alwaye (82,000 tonnes of N and 36,000 tonnes of P_2O_5); Madras Fertilizers Ltd., Madras (164,000 tonnes of N and 85,000 tonnes of P_2O_5); Fertilizers Plant of Hindustan Steel Limited, Rourkela (120,000 tonnes of N); Gujarat State Fertilizers, Baroda (216,000 tonnes of N and 52,000 tonnes of K_2O); Coromandal Fertilizers Limited, Visakhapatnam (80,000 tonnes of N and 72,000 tonnes of K_2O); Shriram Chemicals Ltd. (110,000 tonnes of N) and Indian Explosives Ltd., Kanpur (200,000 tonnes of N). Besides the Bhillai, Durgapore and Rourkela units of Hindustan Steel Limited as well as M/s. Tata Iron & Steel, Jamshedpur and Indian Iron & Steel have a combined capacity of 30,000 tonnes of N.

Production of nitrogenous fertilizers during 1972-73 amounted to 1.06 million tonnes. The production is based mainly on Naphtha and in some cases, lignite coke and coke-oven gas as well as natural gas, provide the feed-stock.

Imports of nitrogenous fertilizers were of the quantity of 690,000 tonnes in 1972-73 against 481,000 tonnes in 1971-72.

In addition to the 1.46 million tonnes capacity already installed, a further 2.66 million tonnes capacity has been approved. The new projects include Cochin Fertilizers (Phases I and II), Cochin, The Durgapur, Barauni, Talcher, Ramakuntum, Haldia and Korba projects of the Fertilizer Corporation of India, Southern Petrochemicals, Tuticorin, Indian Farmers Fertilizers Cooperative Ltd., Kandla, Zuari Agro-Chemicals Ltd., Goa and Mangalore Chemicals and Fertilizers Ltd., Mangalore. The Namrup, Gorakhpur, Nangal and Sindri Projects of Fertilizer Corporation of India Limited are envisaging expansion. Same is the case with M/s. Fertilizers and Chemicals Travancore Ltd., Alwaye and M/s. Shriram Chemicals, Kota.

With the implementation of the new and expansion schemes, the total installed capacity is to increase to 4.125 tonnes of nitrogen.

Actually, the Ministry of Agriculture, Government of India, have estimated a demand for nitrogenous fertilizers as 5.2 million tonnes by 1978-79. For attaining production to meet this level of demand, it is estimated that an installed capacity of 7 million tonnes would be required. Such a high target would naturally involve not only the need for licensing fresh capacity, but for mobolising additional production through optimum utilization of the existing installed capacity.

The emphasis has been on Naphtha for the production of nitrogenous fertilizers in India. In the aggregate of 4.12 million tonnes (N) so far approved, 2.176 tonnes is being based on Naphtha. But this feedstock is likely to be in deficit in the near future. Further

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capacity for indigenous fertilizers would, therefore, have to be based later on heavy petroleum fractions or coal. The public sector projects at Haldia, Nangal and Sindri are to base their production on heavy petroleum fraction while non-coking coals would constitute the feed-stock in respect of public sector projects at Korba, Ramagundum and Talcher. In view of this, fuel oil has been exempted from excise duty, in cases where it is used as feed-stock in the production of fertilizers.

Comprising complex as well as single super phosphatic fertilizers, phosphetic fertilizers constitute the second line of fertilizer production base in India. Complex fertilizers are being manufactured at Trombay, Alwaye and Madras in the public sector and Ennore, Baroda and Visakhapatnam in the private sector. The total existing capacity of these six units is 292,000 tonnes per year in terms of P_2O_5. There are 28 units engaged in the production of single super phosphate with a total capacity of 208,000 tonnes. The production of P_2O_5 amounted to 130,000 tonnes in 1972.

The total capacity for phosphatic fertilizers is 500,000 tonnes. Actual output in 1972-73 amounted to 320,000 tonnes and is based on imported phosphoric acid, sulphur and rock phosphate. Nearly 42 per cent of the total production is single super phosphate.

Imports of phosphatic fertilizers were of the order of 284,000 tonnes in 1972-73. The imported phosphates mainly relate to di-ammonium phosphate, mono-ammonium phosphate, ammonium nitro phosphate and NPK complex fertilizers. An additional capacity of 673,000 tonnes of P_2O_5 is spread over the Phase II of Cochin Fertilizers, the Haldia Project of Fertilizer Corporation of India, the Sindri Project of the Corporation, the India Farmers' Cooperative Limited, Hindustan Copper Limited, Khetri, Maharashtra Cooperative and Chemicals Ltd. as well as the Alwaye Plant of Fertilizers and Chemicals Travancore Ltd.

Phosphatic production at Kandla and Goa are to be based on imported phosphoric acid. Two projects at Sindri and Khetri are expected to produce triple-phosphatic while the FCI's project at Haldia is to manufacture nitro-phosphate.

It has been estimated that domestic demand for phosphatic fertilizers is to reach the level of 2.20 million tonnes per year by 1978-79. In terms of installed capacity, the corresponding figure would be 2.8 million tonnes. The domestic demand estimate has been recently revised to 1.8 million tonnes by 1978-79. In any case, there is scope for improving further capacity to the extent nearly of 1.63 million tonnes.

Sulphur is to continue to be an important product. With a view to minimising sulphur use in the producttion of phosphatic fertilizers, it is found desirable to manufacture nitro-phosphate. As in the case of sulphur, dependence on imports of rock-phosphate will also continue although there would be some indigenous production on the deposits located in Rajasthan.

For the manufacture both of nitrogenous and complex fertilizers, the Government of India favourably considers foreign collaboration with reference to capital investment, process and design and engineering know-how. Facilities for indigenous fabrication of several items of fertilizer plants have been established both in the public and private sectors. The industry, however, is dependent on specialised items of equipment like high pressure vessels and reactors, pipes, pipe fittings, pumps and instruments. ☐

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TOILETRIES AND COSMETICS ON EXPORT FRONT

India's total export trade in toiletries, essential oils and perfume materials crossed the Rs. 100 million mark in 1972-73, registering an increase of over Rs. 13 million over the export earning of these products at Rs. 87 million in the preceding year.

Adding to the export effort in the line, M/s. Tata Oil Mills Company Limited (TOMCO), Bombay House, 24, Homi Mody Street, Fort, Bombay-1, one of the firms engaged in the manufacture of a wide range of oil–based products, achieved a major breakthrough in exports during 1972-73. Their export turnover during the year exceeded Rs. 50 million – an appreciable rise over the export performance at Rs. 30 million in the preceding year. In terms of percentage, the increase was of the order of over 66 per cent. Earlier too, the firm had a proven record of export growth – Rs. 13.3 million in 1967-68, Rs. 15.2 million in 1968-69, Rs. 18.4 million in 1969-70 and Rs. 20.30 million in 1970-71. Its customers abroad range from Japan in the East to U.S.A. in the West.

Besides improved physical exports from year to year, TOMCO are also collaborating in joint ventures abroad. UNI–TATA SDN, BEARHAD, the Indo-Malaysian joint venture is under construction and is expected to go on production stream by 1974.

The extensive range of manufactures of the firm includes a large number of items, such as vegetable oilcakes, other oilcakes including solvent extracted cakemeal, refined cooking oil, vanaspati, soaps, detergents and other toilet preparations including hair oil and eau-de-cologne, glycerine, industrial perfumes, essential oils and aromatic chemicals, edible groundnut flour, dehydrated castor oil, cattle feed and poultry feed.

The firm's research and development wing, engaged in conducting research for product development and import substitution, has been successful in achieving increasing substitution of imported fallow with indigenous minor and inedible oils, such as rice bran, sal, kusum and neem in the manufacture of soaps and edible oils. Its 'Magic Detergent Powder' and 'Bonus Detergent Cake', the popular brands among washing preparations, marketed recently, are manufactured without imported tallow and edible oils. Apart from the higher use of minor and edible oils, the research endeavour of the company has lately resulted in substantial saving of vegetable oils used for the manufacture of laundry soaps by the judicious incorporation of certain chemicals. Besides saving vegetable oils, this has enhanced the detergency and the washing property of the laundry soaps.

TOMCO has an annual capacity of 10,000 tonnes for detergents and has recently secured necessary approval to double the same. Their manufacturing plants are located at Cochin, Bombay, Calcutta, Ghaziabad, Madras and Ernakulam.

EXPORT SUCCESS OF AN ENGINEERING FIRM

With export orders amounting to Rs. 13.30 million during the year 1972-73, M/s. New Standard Engineering Company Limited, NSE Estate, Goregaon, Bombay 63, manufacturer of industrial machinery, steel foundry and a number of other engineering goods achieved appreciable success in their exports. The firm was able to secure these orders against stiff competition from the developed countries and the export supplies were directed to a number of markets mainly in Europe and South Asia. The firm has also recently finalised a contract for setting up a steel foundry for the Steel Corporation of Sri Lanka. A part of the consignment has already been shipped to that country. The firm was recently awarded a 'Certificate of Export Excellence' by the Textile Machinery Manufacturers Association in recognition of its export performance.

The firm's range of manufactures broadly includes a wide variety of sophisticated machinery including textile and construction machinery, iron foundries, machine tools and boilers. In the group of textile machinery, the items of manufacture include single process blow room plant for textile mills, Augusta suction, Augusta overhead cleaners and stop device. The production range of construction machinery covers single and double bucket weightbatchers and tar boilers and tar sprayers while under plant fabrication, the range includes mild steel fabrication plant equipment, such as, condensors, pressure vessels, air receivers, heat changers, reaction vessels, mixers, agitators, filters and tankers for use in different industries like chemical, sugar, paper, fertilisers, cement, pharmaceutical, dye-stuff and other heavy industries. Mild steel floor grills and gratings are also manufactured by the firm. Besides these, it manufactures electrically operated overhead travelling cranes, a wide variety of signalling equipment, storing equipment and even sports goods like dumb-bells and weight lifting plates.

The Bombay firm is also engaged in research and development work aimed at product development, particularly in the fields of textile machinery, machine tools and forging and steel re-rolling. The R & D activities of the firm have enabled it to develop some new items in recent years. Lately, the firm received

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a licence to expand its manufacturing activities in regard to such textile machinery items which have been developed by the firm's own Research and Development wing. Their proposal for collaboration with a Japanese concern for manufacture of foundry equipment has also been approved by the Government of India.

India supplies overseas a wide range of industrial machinery every year. During 1972-73, the export range included textile machinery, power generation machinery, food processing machinery, machinery and appliances other than electrical, construction and mining machinery, leather machinery, metal working machinery other than machine tools, mineral crushing, sorting and glass working machinery, agricultural machinery, paper and pulp making machinery, printing and book binding machinery and office machinery.

INDIAN HAND TOOLS TO WORLD MARKETS

A major improvement is recorded in India's export trade in hand, small and cutting tools. The export value of these tools reached a level of nearly Rs. 59 million in 1971-72 as compared to about Rs. 49 million in 1970-71 and only Rs. 26.60 million in 1969-70. Even during the first three quarters of 1972-73 (April – December '72), the value was Rs. 58.40 million, touching the figure for the entire preceding year and registering an increase of more than Rs. 16 million over the exports at Rs. 42.34 million during the corresponding period of 1971-72.

During the period of review in 1972-73, spanners constituted the major item of export with a foreign exchange earning of Rs. 19.27 million. Czechoslovakia, U.K., Poland and Yugoslavia were the major buyers in order of their intake. Pipe wrenches which were supplied abroad at a value of over Rs. 10.50 million constituted the next best variety of export earning. U.S.A. with an intake, more than 50 per cent of the total export value, topped the list of buyers, followed by Federal Republic of Germany, Czechoslovakia, Canada, Greece, Thailand, Iran, Australia and Poland. Other important items exported in the category included pliers/pincers, files and rasps, metal working hand tools, dies and taps, milling cutters, rock drilling or coredrilling bits, tungsten carbide tipped rods and carbide tips.

Adding to the export effort in the line, M/s. Hind Dowidat Tools Ltd. exported their hand tools almost to all countries at total value of Rs. 8 million. To its credit the company has earned an export merit certificate for its outstanding export performance during 1971-72. They have also been granted a letter of intent for increasing their annual manufacturing capacity from 1080 M tons to 2,400 M tons of finished hand tools. The firm is already engaged in expansion plans. Lately, they have arranged for two additional generating sets so that their production does not suffer in case of even power failure.

India's total production of hand tools and small tools in the organised sector was of the order of Rs. 400.86 million in 1971 as against Rs. 363.20 million in 1970.

FOREIGN EXCHANGE EARNING THROUGH CONSULTANCY SERVICES

Overseas supply of Indian consultancy services in recent years in growing volume has amply proved India's competitiveness in regard to technical expertise achieved by it in a number of industries including those manufacturing sophisticated products. The country has a number of consultancy assignments abroad. M/s. National Industrial Development Corporation Ltd. (NIDC), Chanakya Bhavan, NDMC Complex, Vinay Marg, New Delhi, for instance, have a proven record of offering a wide spectrum of industrial and management consultancy services as well as economy development services at domestic level as well as in overseas countries. During 1972-73, the firm's total foreign exchange earning totalled nearly Rs. 800,000 for undertaking consultancy and collaboration assignments abroad.

The Corporation recently entered into a five-year collaboration agreement with National Development Coraporation of Tanzania on different industrial programmes undertaken by the Tanzanian Corporation in that country. Aside from this, the Corporation has undertaken project engineering and turnkey consultancy services for industrial projects in countries like Iran, Libya, Nepal, Sri Lanka, Kenya and South Yemen Republic on behalf of United Nations Industrial Development Organisation (UNIDO) as well as other foreign governments. The export earning from the consultancy services of the Corporation, though limited, is significant as it helps to build up an image of India's technical competence so that a conducive environment is built for Indian exports.

At home also, the Corporation has quite a few consultancy assignments. It has recently bagged a turnkey consultancy assignment for setting up pulp and paper project in Nagaland. To keep itself abrest of the current technological developments in the paper industry including replacement of traditional raw material by cellulosic materials, such as bagasse and eucalyptus, NIDC has entered into a technical assistance agreement with a well know Canadian firm which is one of the leading consultancy firms in the line. With this agreement, the Corporation is now in a position to provide consultancy services on all aspects of the paper industry. It has also recently entered into a new activity—'Airport Designing' and is currently engaged in detailed designing and engineering of the new International airport at New Delhi.

EXPORT PERFORMANCE AND POTENTIAL

DOMESTIC ELECTRIC EQUIPMENT EARN MORE

India's total foreign exchange earning from the overseas supply of domestic electric equipment registered nearly 100 per cent increase during 1972-73 as compared to the preceding year. During the year under review, the export earning was Rs. 30.85 million as against Rs. 15.44 million in 1971-72.

Ceiling fans constituted the most popular item during the year which alone secured Rs. 19.10 million, accounting for more than 60 per cent of the entire export value of the group. Iraq with an intake valued at Rs. 6.90 million bought 68,287 units and topped the list of buying countries. Kuwait, the second best market, puchased 44,378 units at a cost of Rs. 4.50 million, followed by Nigeria at Rs. 1.54 million (12,003 units), Sudan at Rs. 1.32 million (13,775 units), Saudi Arabia at Rs. 1.26 million (13,700 units) and Nepal at Rs. 0.75 million (6,552 units). Among other buying countries, China Republic, Iran, Malaysia, South Yemen People's Republic, Singapore and Muscat were prominent.

Next to ceiling fans, domestic refrigerators (complete) and parts together netted over Rs. 3 million. Of this, refrigerators alone secured over Rs. 2.80 million while refrigerator parts accounted for Rs. 0.20 million. With an intake valued at over Rs. 2.60 million, Poland was the largest single buyer for refrigerators. In terms of quantity, it bought 4,785 units. Dubai, Mauritius and Nigeria were among other buyers. Refrigerator parts too were mainly imported by Poland at a cost of Rs. 0.13 million.

Table fans also constituted an item of sizeable overseas offtake during the year. In terms of quantum and value, 21,688 units valued at Rs. 2.55 million were sold to about a dozen countries. Here again, Poland topped the list of purchasing countries having bought 15,882 units valued at Rs. 1.91 million. Kuwait, Nigeria and Iran were significant among other destinations.

In addition to these main items, regulators and parts of electric fans, pedestal fans, portable blowers, air circulators, complete domestic washing machines, rail carriage fans, electric coffee meal and food grinders, electric mechanical domestic appliances, domestic room heaters, domestic water heaters including immersion heaters, stoves for cooking, smoothing iron and hair dressing appliances, electric heating resistors, other electrothermic domestic appliances and parts and electric vacuum cleaners were active in export trade. Poland, Bulgaria, Australia, Sri Lanka, U.S.S.R., U.S.A., Iraq, Afghanistan, Kuwait, Singapore, Thailand, Saudi Arabia, Ethiopia, Bangladesh and Nigeria were the principal destinations for these items.

EXPORT PERFORMANCE OF ENGINEERING GOODS

India's exports of engineering goods are estimated to have improved during the first four months of 1973-74 (April-July, 1973) to Rs. 469.50 million as compared to Rs. 390.60 million during the corresponding period of the preceding year. The improvement in terms of value was of the order of 20 per cent. In fact, according to the Engineering Export Promotion Council, Calcutta, the exports during the period under review of 1973-74 would be more as the value indicated is exclusive of land route exports and those effected from minor ports.

The overall export value of industrial plant and machinery increased by over Rs. 19 million to Rs. 45.26 million during April-July, 1973 from Rs. 26.42 million in the corresponding period of the preceding year. The improvement was registered due to greater overeas supplies of asbestos cement plant and machinery, food processing machinery including tea and oil machinery and other industrial machinery, such, as boilers, excavators and earth moving equipment. The increase in exports of the industrial plant and machinery would have been much more but for a set-back in the foreign exchange earning of textile machinery including jute and knitting machinery, sugar manufacturing plant and machinery and paper and chemical machinery.

Auto and auto parts including complete automobiles earned more at Rs. 48.87 million compared to Rs. 48.35 million in the comparable period of 1972-73 while bicycles and parts fetched Rs. 43.15 million against Rs. 26.42 million. The foreign exchange earning of railway wagons, coaches and parts was up at Rs. 9.70 million against Rs. 3.16 million and that of machine tools rose to Rs. 11.83 milllon against Rs. 8.55 million.

The other specific groups and items which registered increase during the period of review were: electric wires and cables (Rs. 37.75 million from Rs. 37.50 million); M.S. pipes and fittings (Rs. 35.05 million from Rs. 30.25 million); hand, small and cutting tools (Rs. 30.40 million from Rs. 24.40 million); electric motors, transformers, switchgears (Rs. 21.65 million from Rs. 15.45 million); electronics (Rs. 18.87 million from Rs. 8.30 million); castings and forgings (Rs. 15.46 million from Rs. 12.85 million); batteries (Rs. 6.81 million from Rs. 6.21 million); non-ferrous metals other than aluminium (Rs. 18 million from Rs. 10.30 million); air-conditioners and refrigerators (Rs. 8.97 million from Rs. 4.16 million); ferrous holloware (Rs. 5.88 million from Rs. 3.73 million); bright bars and shaftings (Rs. 4.81 million from Rs. 3.10 million); air compressors (Rs. 2.76 million from Rs. 2.20 million); oil lamps and stoves (Rs. 7.63 million from Rs. 3.81 million); fire arms of sports (Rs. 2.33 million from Rs. 1.80 million); abrasives and grinding wheels (Rs. 1.68 million from Rs. 1.17 million) and cutlery (Rs. 1.50 million from Rs. 1 milllion). Builder's hardware, water and sanitary fittings, steel furniture, stainless steel utensils, wire nails and nettings, bolts, nuts, rivets and washers, wood screws, electric accessories and appliances, electric lamps and tubes were the other items which improved their export earning during the period under review.

The individual engineering items, the exports of which declined during 1973-74 (April-July 1973) as compared to the preceding year were: textile machinery including jute and knitting machines; sugar manufacturing plant and machinery; paper and chemical machinery in the group of industrial plant and machinery; agricultural implements; razor blades; diesel engines and parts; electrodes and welding rods; electric fans and parts; railway track material; wire ropes; aluminium and aluminium products; transmission line towers; cranes lifts and hoisting machines.

BOOST IN PEARLS AND PRECIOUS STONES EXPORT

Registering an impressive rise of over 50 per cent over the exports during the preceding year, India's exports of pearls, precious and semi-precious stones during 1972-73 reached a level of Rs. 779.30 million. During 1971-72, the export value was of the order of Rs. 515.15 million.

Diamonds (except industrial, not set or strung) constituted the most popular item for the buyers overseas. This single item alone earned foreign exchange amounting to Rs. 625.25 million. Of this, the share of cut diamonds was the maxmium at Rs. 601.27 million while uncut diamonds accounted for nearly Rs. 24 million. Belgium, India's traditional buyer, was the major purchasing country of cut diamonds during the year. Its puchases totalled Rs. 145.65 million. U.S.A. was the second best destination, next to Belgium, which bought worth Rs. 133 million. Hong Kong was the third significant buyer which purchased worth Rs. 106 million, followed by Japan at

Rs. 57.28 million, Netherlands at Rs. 39.15 million, U.K. at Rs. 34 million, Israel at Rs. 23.68 million, Singapore at Rs. 15.40 million, France at Rs. 10.38 million, Switzerland at Rs. 9.65 million, Australia at Rs. 7.30 million and Lebanon at Rs. 5.80 million. Federal Republic of Germany, Malaysia, Thailand and Spain were among the other buyers. For uncut diamonds too, Belgium was the topmost buyer which bought worth Rs. 6.58 million, followed by U.S.A. at Rs. 5.53 million, Hong Kong at Rs. 4.10 million, U.K. at Rs. 2.35 million, Netherlands at Rs. 2.15 million and Israel at Rs. 1.12 million.

Apart from diamonds, pearls (not set or strung) brought in Rs. 10.40 million while synthetic reconstituted precious and semi-precious stones fetched Rs. 6.80 million. In the former catogory, pearls of different varieties, such as natural unworked and cultured were supplied mainly to U.S A., Hong Kong, Dubai, Japan and France, while for the latter Switzerland and France were the leading destinations.

Among other precious, semi-precious stones (not set or strung) supplied abroad included natural semi-precious stones, natural precious stones (cut), natural precious and semi-precious stones (uncut) and emeralds (uncut). These fetched foreign exchange to the tune of Rs. 136.86 million. Of this, natural semi-precious stones (cut) brought in Rs. 54.70 million while emeralds secured Rs. 4.50 million. Federal Republic of Germany was the principal market for natural semi-precious stones at Rs. 8.33 million, followed by Switzerland at Rs. 8 million, U.S.A. at Rs. 7.88 million, France at Rs. 7 million, Hong Kong at Rs. 4.50 million and Japan at Rs. 4.30 million while for emeralds, Belgium was the largest buyer which purchased worth Rs. 2 24 million, nearly 50 per cent of the entire export supplies of the item. Japan, U.S.A., Switzerland, Hong Kong, U.K. and Singapore were prominent among other buyers.

ESSENTIAL OILS AND PERFUME MATERIALS EXPORTS LOOK UP

The year 1972-73 witnessed India's export earning of essential oils, perfume material, toilet, polishing and cleansing preparations crossing the Rs. 100 million mark. In fact, the exports rose to this level from Rs. 71.25 million in 1970-71 and Rs. 87.10 million in 1971-72.

During 1972-73, perfumery and cosmetics, dentifrices and other toilet preparations secured Rs. 41.70 million as against Rs. 31.95 million in the preceding year. Essential oils, perfumes and flavour material, the next important group earned Rs. 40.80 million against Rs. 39.25 million. Soaps, cleansing and polishing preparations also brought in Rs. 17.70 million against Rs. 15.90 million.

In the gronp of perfumery, cosmetics and dentifrices, agarbatties was the most popular item in overseas demand. It was exported to fetch as much as Rs. 15.85 million. U.S.A. was the leading customer which imported worth Rs. 3.75 million. Nigeria the second important destination bought worth Rs. 1.75 million, followed by Ethiopia at Rs. 1.60 million and Singapore at Rs. 1.30 million. Face powder was another popular cosmetic aid which was supplied abroad at a cost of Rs. 11.93 million. U.S.S.R. was the largest single buyer which purchased the bulk at Rs. 11.83 million. Perfumes not containing spirit secured Rs. 2.48 million and Saudi Arabia, Yemen Arab Republic and U.S.A. were the leading customers. Hair oil was the next best item which earned Rs. 2.35 million. Kuwait, Dubai, Saudi Arabia, U.K., Malaysia, Nepal and Bahrein Islands were the prominent absorbing countries.

Apart from these, the export value of other items in this group was : tooth paste Rs. 1.63 million; talcum powder Rs. 1.26 million; shaving creams Rs. 1.06 million and face cream Rs. 0.43 million. Brilliantines, hair cream, hair shampoos (non-spiritous and spiritous), toilet powder, hair dye, cosmetic toilet prefumes and perfumes containing spirit were the other items active in export trade.

In the area of essential oils, perfumes and flavour materials, a variety of essential oil resinoids, such as, lemon grass oil, palmarosa oil, sandalwood oil, vetiver oil, peppermint oil, orange oil, keora oil, giner oil, eucalyptus oil, clove oil, cinnamon leaf oil and oil of spices were exported to the tune of Rs. 40 15 million. Of this, sandalwood oil alone fetched Rs. 27.82 million. In terms of quantity, 0.12 million kgs. were supplied abroad. U.S.A. was the biggest market which alone bought worth Rs. 10.17 million followed by France at Rs. 4.50 million, U.K. at Rs. 2.86 million, U.S.S.R. at Rs. 2.10 million, Japan at Rs. 1.83 million and Netherlands at Rs. 1.30 million. In the same group, synthetic flavour material attars, mixtures of aromatic chemicals and rose water including concentrates were also exported to earn Rs. 0.66 million.

In the field of soaps, cleansing and polishing preparations, surface acting agent-washing preparations was the leading category of export growth which secured Rs. 9.80 million. Of this, synthetic detergents alone earned Rs. 9.20 million. The bulk of the supplies were effected to the Soviet Union at a value of Rs. 8.85 million. In the same group, soaps of different varieties, such as toilet soap (other than dental soap), medicated soap, household laundry soap, tablet cakes, flakes, chips and powder, bar block and other varieties were exported to the tune of Rs. 7.38 million. Bangladesh and Nepal were the leading purchasing countries. Polishes, pastes, powders and preparations and polishes for applications to metalware were the other items supplied abroad.

OVERSEAS DEMAND FOR INDIAN TRAVEL GOODS

Registering about three fold increase over the export turnover during 1971-72, India-manufactured travel goods, handbags and similar items secured foreign exchange amounting to Rs. 23 million during 1972-73. The exports rose to this level from only Rs. 8.65 million in the preceding year.

Handbags and wallets (excluding of artware leather) in the group were the most popular items for overseas buyers during the year. These were supplied abroad to fetch nearly Rs. 16 million, which accounted for more than 69 per cent of the entire export earning. In terms of quantity, in all 2.93 million numbers were supplied. Japanese customers imported the bulk of supplies numbering to 2.40 million bags at a value of Rs. 10.90 million. U.S.A. was the second best customer for the item. It purchased 0.24 million numbers worth Rs. 2.90 million. Among other destinations, Canada, Federal Republic of Germany, Hong Kong, Switzerland and U.K. were prominent.

Handbags of vulcanised fibre was the next best item of sizeable export growth. A large number of countries purchased these at a value of Rs. 2.15 million. Saudi Arabia, U.K., U.S.A., Tanzania Republic, Netherlands, Japan and Federal Republic of Germany were the principal customers.

Among other items, travel goods of leather secured about Rs. 3 million while those of vulcanised rubber earned Rs. 1.88 million. Japan and U.S.A. were the leading customers for travel goods of leather while Kuwait, U.S.A. and German Democratic Republic were the significant importing countries for travel goods of vulcanised rubber.

PETROLEUM EXPORTS DOUBLED

India's exports of petroleum and petroleum products more than doubled to Rs. 288 million in 1972-73 from Rs. 105 million in the preceding year. Of the total earning, petroleum (crude and partly refined) secured Rs. 156.20 million in foreign exchange while petroleum products brought in Rs. 131.80 million. In the preceding year, the export value of these products was Rs. 16.60 million and Rs. 88.40 million respectively.

Petroleum was supplied to the tune of 0.92 million tonnes in terms of quantity. The total export earning of petroleum at Rs. 156.20 million was entirely contributed by crude petroleum. In the group of petroleum products, kerosene constituted the major item of sizeable export earning which secured foreign exchange at a value of Rs. 44.95 million. In terms of quantity, 74.93 million litres were supplied abroad. Diesel was the next best item which brought in Rs. 39.90 million (45,866 tonnes). Light distillates to the tune of 43.52 million litres valued at Rs. 39.16 million were also exported.

In addition to these main varieties, lubricants containing 70 per cent or more of the petroleum earned Rs. 3.52 million (2 82 million kgs) while those containing below 70 per cent weight of petroleum netted Rs. 1.10 million. Residual fuel oils (heavy ends) was yet one more variety active in exports during the year. It was supplied abroad at a value of Rs. 1.26 million. Quantitatively, 2,835 tonnes were sold to overseas buyers.

Mineral jelly and waxes, non-lubricating oils, pitch from coal tar or other mineral tars, petroleum bitumen and other residues and bituminous mixtures were the other products exported during the year.

T.D.A.'S EXPORTS TO U.S.A.

The export earning of the Trade Development Authority (TDA) of India totalled Rs. 345 million in 1972-73, exceeding its export target for the year by Rs. 7 million. A significant feature of this earning was that the highly developed economy–U.S.A. absorbed Indian goods through TDA amounting to Rs. 225 million during the year under review as compared to only Rs. 122.70 million in 1971-72.

Much of the rise in sales of the client firms of TDA to U.S A. is attributed to the exports of sports light-weight Roadster bicycles. Although some components - three speed hubs, particularly used in the manufacture of these bicycles were procured through import, TDA is endeavouring to get these manufactured indigenously by M/s. Hindustan Machine Tools, Bangalore. The other items of export promotion of TDA to U.S.A. include woollen knitwear for ladies, locks and padlocks, toys and dolls.

Besides U.S.A., TDA has also succeeded in introducing a number of new items to other new markets in 1972-73. For instance, it supplied electronic calculators to Sweden and home furnishings, garments and ivory carved items to Spain. Its export success during the year is an outcome of its advance and accurate planning technique and product adoptation so as to satisfy the changing needs of the foreign buyers. An export target of Rs. 520 million has been set by TDA for 1973-74.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PROGRESS IN PRODUCT STANDARDISATION

The Indian Standards Institution (ISI) is an organisation set up by the Government of India for prescribing standard specifications for various products including those of engineering and chemical origin. The Institution has recently published standard specifications of a few products the details of which are enumerated in the following paragraphs.

Slotted countersunk head wood screws are already covered by the ISI and the standard specifications have been in force for some time now. The specifications have been now revised, bringing four separate standards under one head, specifying requirements for the screws. The sizes of wood screws incorporated are based on the size of wire gauges.

An Indian standard test chart for general purpose gear shaping machines has also been published. The chart describes both, geometrical and practical tests on these machines having pinion type cutters and the corresponding permissible deviation. The chart deals with the verification of accuracy, though it does not apply with the testing of the machines running or the machines characteristics, such as, speed and feed, which however, should be checked generally before testing the accuracy.

Dealing with requirements of steel countersunk head wire nails, the ISI has published a revised standard specification for mild steel wire nails. The original specification was announced in 1961 and the present revision has enabled the upgrading of the countersunk angle from 90° to 120°. The nail head diameter has also been changed suitably as also provision has been made for tolerance for eccentricity and ovality of nail heads. These standards, thus revised, provide for certification marking of the product, manufacture according to those specifications under the ISI Certification Marks Scheme.

Calcium Silicon is another product selected by ISI for standardisation. Required commonly in the iron and steel industry, this product was already standardised earlier and a revision has now been announced. The revised standard provides for certification marking of the product.

Physical methods of tests for white, tossa and daisee uncut Indian jute has also been prepared. The tests include bulk density, bundle strength, fineness and brightness. These standards are taken into consideration for the purpose of grading raw jute.

ISI has also prepared a draft standard Code of Practice for Treatment of Water for Land Boilers. The standard dealing with the conditions required and the chemical methods for attaining them for these boilers operating up to 18 kg./cm^2, pressure is to be circulated to the manufacturers, technologists and others interested before the draft is finalised.

Methods of tests for autoclaved cellular concrete products have also been published by the ISI. The tests include those for determining strength, deformation and cracking of flexural members subject to bending-sustained loading test. Autoclaved cellular concrete is a product which has been developed commercially abroad and is in the process of development in India.

An Indian standard Code of Practice for Handling and Storage of microtransparencies and microfiche has been published covering the manner of handling these materials during exposure, processing, packing and despatch. Certain important aspects like care in handling to check physical damage and packing methods for transmitting microcopies have also been incorporated in the specification standards.

The ISI has recommended frequency notation for periodical publications by which a simple notation for indicating the frequency of a periodical is recommended. The frequency is generally denoted by such descriptive terms as daily, weekly, monthly, quarterly and annual. Some of the descriptive terms, such as, bi-weekly and semi-monthly lead to confusion. To overcome this lack of precision in denoting the frequency of a publication, the UNESCO had suggested that the frequency should be denoted by a number indicating the number of issues in a year. In the standard recommended by ISI, a notation is offered which would not only denote the frequency of a publication precisely, but also provide information about the number of months for which a volume runs.

Steel rivets and stay bars for boilers are the other products that recently attracted the ISI. The standard specifications announced covering the requirements of these products for use in boilers and provide for Certification Marking of the product under ISI Certification Marking Scheme. Another standard published recently by ISI related to the second revision of a standard announced earlier for high tensile steel rivet bars for structural purposes. The revision covers the requirements for high tensile steel rivet bars in sizes up to 40 mm in diameter for structural purposes. The main modification made in the revision relates to chemical composition and yield stress requirements of high tensile steel rivet bars. The food and beverage industry has long felt the need for standardisation of stainless steel tubes for the industry. This standard provides for certification marking for the products.

Methods of chemical analysis of silver anodes to determine silver and copper in specified ranges have also been standardised. Silver anodes used in electroplating ought to be of high purity and hence accurate analysis of silver and copper is necessary in determining the quality of anodes. Although a standard was orignally published in 1962, need has been felt to replace the colorimetric method for copper for a more sensitive photometric method.

Among other standards published by ISI recently are those determining the methods of dynamic force callibration of axial load fatigue testing machines, code of practice for storage of vulcanised rubber, aluminium power for explosives and pyrotechnic compositions, graphited grease, automotive grease, polystyrene moulding materials, paint removers, grey cotton yarn and cotton cellular shirtings.

It is incumbent under the law that the concerned manufacturers in India are to follow the standards laid down by the ISI.

INNOVATIONS IN TEXTILE MACHINERY

Contributing actively to India's endeavour to develop indigenous sophisticated machinery of various kinds, M/s. Star Textile Engineering Works Limited, 12, Appolo Street, Fort, Bombay-1, are already known for their pioneering role in the manufacture of fluted rollers for the textile industry in India. The firm has now developed know-how for modernising jute spinning frames with the assistance of M/s. Indian Jute Industries Research Association (IJIRA), Calcutta. It is claimed that the firm is in a position to rehabilitate old jute machinery at a cost much lower than that of a new machinery.

The Bombay firm also proposes to manufacture rotary and flat-bed screen printing machines for the first time in India in collaboration with a Japanese firm. It is also to undertake manufacture of rotary screen printing machines in collaboration with the same Japanese concern. For manufacture of jet dyeing plants required for synthetic and polyester fibres and their blends, it has recently entered into a technical collaboration with another Japanese firm M/s. Hisaka Works. The firm is presently engaged in marketing high temperature, high pressure horizontal beam dyeing plants developed by its own Research of Development unit.

Additionally, the firm's manufacturing programme, estimated to cost about Rs. 11 million, includes an indigenously developed hydropneumatic clamping machine, hydraulic copy turning attachment based on the designs of CMTI, Bangalore and multi-spindle drilling attachments based on the designs of a West German firm. The project is expected to be completed by the end of 1975. After materialisation of this expansion programme, the firm's present turnover is expected to go up to Rs. 80 million from the present level of Rs. 23 million.

HIGH POWER CAPACITY GENERATOR TO BE DEVELOPED

India took a step ahead in the manufacture of power generating sets by developing 500 MW power generating sets which were not being manufactured in the country hitherto. The interesting feature of the manufacture of these high power sets is that these are being developed with larger indigenous effort by M/s. Bharat Heavy Electricals Limited (BHEL) and M/s. Heavy Electricals India Limited (HEIL).

A 400 MW power instrument transformer has already been developed earlier and manufacture of these are to be started soon along with circuit breakers and high speed drive turbines for compressors.

It is expected that the production of BHEL and HEIL during 1973-74 would cross the Rs. 2,000 million mark and deliveries of equipment to various electricity boards in the country would exceed 2,000 MW capacity. By the end of 1975, the annual delivery capacity of both the units is estimated to go up to a level of 3,000 to 3,500 MW of power equipment. Indigenous power generation availability for the Fifth Five Year Plan period has been estimated at 15,150 MW. Of this, BHEL and HEIL already secured orders for 10,500 MW.

During 1972-73, both the firms produced equipment valued at over Rs. 1,400 million which registered about 40 per cent increase over the production in the preceding year at a value of Rs. 1,020 million. In 1972-73, in all 15 generating units, aggregating 1,100 MW (Hydel and thermal) were supplied in addition to their contribution to the Railways by way of traction equipment and transmission lines.

PROGRESS OF A STEEL PLANT CONSTRUCTION UNIT

M/s. Hindustan Steelworks Construction Limited (HSCL) in India's public sector, primarily engaged in steel plant construction, has constructed the first blast furance complex of the Bokaro Steel Plant. The firm has the capacity to offer its services to set up semi-integrated steel plants abroad.

The State Construction Contracting Company (SCCCO) of Iraq has recently sought the firm's technical assistance for designing and constructing bridges, pre-stressed concrete works, R.C.C. silos and piling works in the country. The Iraqi firm has also invited the Indian assistance for setting up joint ventures. The Indian company has submitted tenders for setting up semi-integrated steel plants in Iraq and is hopeful of securing the same.

HSCL's activities cover expansion of existing steel plants in public sector as well as the erection of new steel plants. On domestic front, besides construction at Bokaro Steel Plant, it is associated actively with a number of projects including Dalli Mechanised Mines, second sintering plant and eighth coke oven battery at Bhilai where during 1972-73, BORIDIH DAM was completed in record time.

It is also associated with Bhilai plant's expansion programme enabling it to produce steel at an estimated level of 4 million tonnes. Along with this, HSCL has also to work for Bokaro plant's expansion programme. The new three steel plants proposed to be set up shortly at Salem, Visakhapatnam and Vijayanagar are also to be constructed by HSCL. The capacity of the last two has been placed at more than 2 million tonnes each in the first phase itself. The firm is also associated with the expansion work of Durgapur and Rourkela steel plants.

HSCL is progressively engaged in diversification of its present activities. Besides the area of steel, it has to its credit association with a number of projects, such as, erection of ITI's (Indian Telephone Industries) telephone plant at Naini and switching factory at Rae-Barelly in Uttar Pradesh, Zircaloy fabrication plant of M/s. Bhabha Atomic Research Centre (BARC) and second unit of Hindustan Cable Factory at Hyderabad, M/s. Bharat Pumps and Compressors Plant at Naini (Allahabad), National Mineral Development Corporation's iron ore deposits at Bailadila, Bokaro Steel Lime Stone Quarry at Bhawanathpur, M/s. Bharat Aluminium Company's smelter at Korba, Dry Dock of M/s. Garden Reach Workshop at Calcutta, Central Inland Water Transport Corporation's Works at Calcutta, Indian Oil Corporation's refinery at Haldia, Construction of grain silos of the Food Corporation of India at Delhi, New Delhi Municipal Committee's dome construction work, J. K. Cold Storage and other multi-storeyed buildings in Delhi, Coal handling plant of Haryana Electricity Board at Faridabad and scooter factory at Lucknow.

The firm's magnitude in construction work of various types includes even new township construction. It is currently constructing more than 10,000 houses at Bakaro alone. It has been entrusted with construction of a number of other townships in the country. For instance, township at Bhawanathpur and others at Vizag for M/s. Bharat Heavy Plates and Vessels Ltd., at Korba for M/s. Bharat Aluminium township and for ITI's at Bangalore.

The firm's sphere of specialisation includes steel plant construction, covering practically all facets of construction engineering, civil engineering works, steel structures including erection of steel melting complex consisting of smelters, oxygen plants, erection of blast furnace units, electrical installations, cable network, erection of equipment for rolling mills, strip mills, hot coil finishing section and refractories lining works of steel plants.

Besides steel plants, it has specialised in design and construction of bridges including pre-stressed concrete works, construction of dams and reservoirs, dock and harbour engineering works and construction of R.C.C silos.

The firm is now poised to enter, other fields, such as, piling where a start has already been made with the beginning of piling work of the Second Hoogly Crossing. It is also to undertake erection of power plants. In this field, the firm is entrusted with the work relating to erection of boilers for Talcher Unit of the Fertilizer Corporation and Gandhinagar Power House in collaboration with M/s. Bharat Heavy Electricals Ltd. A number of other assignments have also been undertaken by the firm.

HMT'S STRIDE IN AUTOMATIC WATCH PRODUCTION

Although a late entrant in the field of production of watches, India is gradually emerging as a competent supplier of watches in the world markets in recent years. M/s. Hindustan Machine Tools (HMT), Bangalore in the public sector of India, known internationally for their manufacture of sophisticated machine tools, have diversified their product range to include watches and a number of other different items. During 1972, HMT exported 2332 watches to about a dozen countries including even sophisticated ones like the United States, Canada, United Kingdom and the West Germany. Interestingly, even Switzerland and Japan which are the leading watch manufacturing countries in the world figure in HMT's export list.

HMT watches are bought by about 45 million customers every year. Their total production of watches, so far, amounts to 0.44 million pieces valued at

Rs. 45 million. It has recently finalised plans to step up production and diversification in this line of manufacture. The plan envisages annual production of about 200,000 automatic calendar watches in collaboration with the Citizen Watch Company of Japan. The Bangalore firm has, so far, turned out 9757 automatic watches worth Rs. 2.95 million.

Future expansion plans of the Company also include a scheme to promote ancillary watch manufacturing units in various states of the country for improving watches production. Under the scheme, HMT will undertake mass production of components of watches for supply to selected entrepreneurs in these states, who in turn will assemble and market the watches under HMT patterned name governed by a common marketing and pricing discipline. In due course of time, these ancillary units would be licensed to manufacture some less sophisticated components in their own establishments. HMT's proposal relating to this scheme is under active consideration of the Government of India.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

INDIGENOUS AIR POLLUTION SAMPLER DEVELOPED

A cent per cent indigenous air sampler for use in various agricultural and veterinary research institutions has been developed by a small scientific instrument firm in Maharashtra, M/s. T. Mohan Rao, Aurangabad.

The new device, known as 'Tilak air sampler' is useful in recording and measuring the percentage of biopollutants in air. Biopollutants are the pollution caused by animals and plants. These are responsible for various diseases of skins, chest and lungs in human body, skin and respiratory diseases in animals and fungal diseases in corps. These could be controlled and reduced if the precentage of biopllutants in the air in many places could be measured seasonally.

Such instruments have been developed in some foreign countries but are very costly. The air sampler recently developed is very inexpensive as compared to those manufactured abroad. For instance, the indigenous unit costs only one tenth of its counterpart's cost in U.K. while it is one fourth of the cost of the similar one in U.S.A. It is claimed that the effeciency of the indigenous device is 75 per cent as compared to 70 per cent of the Britsh sampler and 60 per cent of the American one.

The sampler is very useful in better understanding of diseases and allurgy caused by airborne pollen or fungal spores. It can also be used as preventive measure against these diseases. In agriculture, the device can give warning of crop diseases caused by fungal spores. The device is run on electricity and provides continuous sampling of air for eight days.

The sampler is made of moulded cast iron, weighs 10 kg and is stable. It is having special arrangements for lubrication of various parts which are replaceable. For details, contact M/s. T. Mohan Rao, Aurangabad, Maharashtra.

IMPROVED LANDING AID FOR PILOTS

M/s. Philips India Limited, Philips House, 7, Justice Chandra Madhab Road, Calcutta 20, have developed a visual aid called the 'T-VASIS System' to pilot in landing aircraft, both during day time, and at night. This is an improvement on the earlier visual approach slope indicator system, VASIS.

In the earlier system, (VASIS), extra groups of lamps are positioned on both sides of the runway, level with the touch down point. These lamps are constructed in such a way that if the plane is on the correct course, at the right altitude and in the glide path, the pilot will see, one behind the other, two horizontal rows of three lights, both to the left and to the right of the familiar pattern of the runway beaconing (which remains otherwise unchanged).

In the new system developed by the Calcutta firm, the indications about deviations from the desired altitude are founded on changes in the pattern of the lights seen by the pilot on the T-Vasis. This enables the pilot to correct his angle of approach with great accuracy.

The new system offers an additional advantage to the pilot of aircrafts like jumbo jet, the cockpit of which is quite high above the landing gear. If navigation during landing takes place on the basis of the picture of the inverted with one extra light above the horizontal row of lights, correction for the great eye height of the pilot in relation to the landing gear is automatic. The aircraft will, therefore, follow the desired glide path and arrive at the touch down point on the landing strip.

The cost of the new visual aid is low and no special equipment is required to be built in the aircraft.

POWER HOUSE WASTE POWDER FOR CONSTRUCTION

The Central Structural Engineering Research Centre, Madras, has designed a three storey "Flyash Building" in its own campus as a demonstration unit, both to builders and public. The building nearing completion, is reported to be the world's first ever 'prestressed' concrete building utilising flyash, a grey powdery waste from coal based thermal plants, on a large scale.

The use of flyash in construction is expected to reduce the construction cost by about 20 to 30 per cent. Moreover, since flyash is a high polluting material, its disposal poses a problem to the power stations who will very much be willing to get rid of it.

However, there is a possibility of sulphur contamination in flyash that may lead to corrosion. With a view to overcome this snag, the Government of India is considering a proposal to set up three public agencies to collect, control quality and grade the flyash before packing and supplying it as building material.

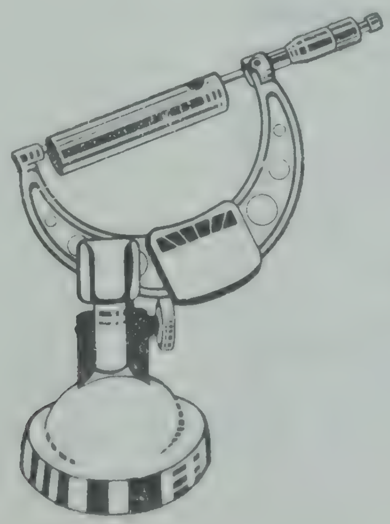
DUST SAMPLER DEVELOPED

A gravimetric dust sampler for regular dust assessment required for evaluating the health hazard has been recently developed by the Health Laboratory of the Central Mining Research Station (CMRS), Dhanbad, Bihar. The dust sampler developed can be used in mines and other industrial units for this purpose.

Till 1970, collection and assessment of dust by number count was being done by imported thermal precipitator, on the lines followed by the Western Countries. After that, gravimetric estimation of dust for evolution of health hazard was followed since the country did not have any standard dust sampling instrument.

The dust sampler developed by the CMRS completely cuts out dust particles of the 7.1 microns and 50 percent of the size of 5 microns unit density spheres. The bigger dust particles are deposited on the floor of a series of horizontal elutriators provided for the purpose. The respirable size particles are then trapped on a filter paper. These dust particles give the concentration of the respirable fraction of the dust in a known volume of air. The sample of dust thus collected over a long period can also be used for determining its chemical composition.

It is a portable unit and operates on a 6 volt battery. Except the filter paper, all other components used are indigenous.



DIRECTION PATTERN OF INDIA'S EXPORT TRADE

(In Million Rupees)

Region	1971-72	1972-73
Africa	**1319.10**	**1010.45**
Arab Republic of Egypt	230.50	317.15
Sudan	517.40	206.95
Nigeria	98.90	96.50
Kenya	78.35	54.60
Tanzania	41.40	30.00
North America	**3021.95**	**3035.20**
U.S.A.	2627.90	2753.70
Canada	394.00	281.50
Latin America	**125.80**	**42.25**
Argentina	60.00	7.70
Other American Countries	**28.00**	**21.85**
ECAFE Countries	**4227.60**	**5554.40**
Japan	1817.00	2167.50
Bangladesh	423.40	1571.85
Nepal	284.35	350.45
Iran	197.45	246.50
Australia	279.25	259.00
Hong Kong	154.65	197.60
Singapore	175.15	177.55
Sri Lanka	212.10	79.45
Other Asian and Oceanian Countries	**625.25**	**726.10**
Kuwait	106.85	148.35
Iraq	97.10	100.20
Saudi Arabia	111.25	121.40
East Europe	**3434.80**	**4694.95**
U.S.S.R.	2086.75	3047.60
Czechoslovakia	304.45	460.30
Poland	199.15	441.65
Bulgaria	154.80	188.60
German Democratic Republic	179.50	150.80
Yugoslavia	243.70	124.45
European Economic Community Countries	**1237.70**	**2216.55**
Federal Republic of Germany	367.50	620.20
Italy	241.50	488.30
France	241.25	454.55
Netherlands	147.15	353.30
Belgium	240.30	300.15
European Free Trade Association Countries	**1880.00**	**2052.65**
U.K.	1680.80	1718.70
Sweden	60.30	161.45
Switzerland	74.80	78.80
Other European Countries	**131.20**	**190.10**
Turkey	20.00	52.15
Ireland	57.85	69.50
Spain	31.00	39.15
Total of all Countries (excluding re-exports)	**16031.50**	**19544.50**

Source : Director General of Commercial Intelligence and Statistics, Calcutta.

TRENDS IN GLASS INDUSTRY

The glass and glassware industry in India has made considerable headway in recent years. A few years back, the whole output of the industry was limited to small household requirements for miscellaneous glass and glassware. It has today diversified its product range to cover a number of items, such as, bottles and vials, table and processware, sheet glass induding figured and wired glass, scientific and laboratory glassware, mirrors, lamp-ware and thermos flasks. A number of new items lately added to the production stream include glass material wool, fibre glass and its products like glass cloth, insulation tapes, safety glass of both, laminated and toughened varieties, glass wire and figured glass and thermometers. In 1970, bellotini beads used as reflective road signs, in markings for textile decoratives, grinding material in paint manufacture and for glass reinforced plastics were added to the production range. The manufacture of lead glass tubing for electric lamp industry has also been taken up. New items likely to be produced in the near future are heat resisting kitchenware, crystalware and opticalware on commercial scale. Steps are also being taken to set up manufacturing facilities for television bulbs.

Presently there are 50 manufacturing units in the line with an annual installed capacity of 462,500 tonnes. The additional capacity of 25, 500 tonnes set up during 1972 was for the manufacture of glass bottles and crystal glassware. In the same year, production of glass and glassware was of the order of 30,000 tonnes, valued at Rs. 400 million as compared to 290,000 tonnes valued at Rs. 370 million in 1971 and 260,000 tonnes valued at Rs. 344 million in 1970.

Both, in 1971 and 1972, the installed capacity for sheet glass was of the order of 22 million sq. metres. In the latter year, however, actual production improved to 20 million sq. metres as against 16.54 million sq. metres in 1971. The demand for this glass is expected to rise at an annual rate of 10 per cent during the period 1973-74 to 1978-79. A capacity of about 40 million sq. metres is estimated to be needed by the end of 1978-79. Thus, though presently there is only one producer of quality sheet glass by Penvernon process, an additional capacity of 15 million sq. metres based on Penvernon process has been approved for 3 entrepreneurs to meet the growing demand of quality sheet glass required by safety glass and mirror producers. Additionally, two units are in advanced stage of converting their existing Forecault process to Panvernon process. In fact, one of these has already installed the machines and is expected to market quality sheet glass very shortly. The other unit may go into commercial production by the end of 1973.

There has been a spurt in the demand of automatic machine made glass bottles owing to the increased requirements of the myriads of varieties of existing and new pharmaceuticals, beverage, food and cosmetic products. The actual production of bottles and vials was 200,000 tonnes in 1972 against 180,000 tonnes in 1971. The installed capacity was 264,000 tonnes and 240,000 tonnes respectively in these years. To meet the growing demand, an additional capacity of 360,000 tonnes has been approved. A capacity of 36,000 tonnes is expected to materialise in 1973 itself. In the field of glass containerware, a striking feature has been the switch over from semi-automatic methods of production to the adaptation of latest automatic machines. Steps have been taken up for establishing indigenous capacity for the manufacture of automatic glass making machines. It is expected that by 1975, 15 automatic bottle making machines with a capacity of 90,000 tonnes per annum will be available from indigenous sources. From 1976 onwards, 18 such machines are likely to be available every year.

The demand for fibre glass is also increasing due to growing requirements of fibre glass reinforced plastic industries which are fast developing. Consequently, two schemes for an additional capacity of 1500 tonnes have been approved for manufacture of fibre glass. The sole unit at present engaged in production of this variety of glass, increased its production by about 35 per cent in 1972-73 as compared to the previous year. The present installed capacity of the unit is 600 tonnes per annum. The existing process for manufacture of fibre glass involves melting of imported marbles of special glass composition in electrically heated bushings. The existing unit in the line is in an advanced stage of implementation of its present capacity for 600 tonnes to 1000 tonnes, based on direct melt from indigenous raw materials This will save the import of the specified marble called 'E' glass marble.

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The capacity needed for glass shells by 1978-79 is estimated at 500 pieces of glass shells so as to meet the requirements of GLS lamps. The existing installed capacity for glass shells spread over 7 units totals 170 million pieces. An additional capacity of 340 million pieces has been approved and is at various stages of implementation. The installed and approved capacity adds up to 510 million pieces. Actual production of the 7 units in the line was 165 million pieces.

As against 3.8 million pieces in 1971, vacuum flask production in 1972 was up at 4.5 million pieces achieving cent per cent capacity utilisation. Similarly, laboratory glassware output increased to 1800 tonnes in 1972 from 896 tonnes in the previous year.

The glass industry is one of those which do not require foreign technical know-how. The Central Glass and Ceramic Research Institute at Calcutta is engaged in activities related to new lines of production and new techniques. A remarkable recent achievement of the Institute has been the development of a process for making indigenous foam glass which has proved to be a better insulant than cork.

The raw materials required by the industry include silica sand, soda ash, lime stone, dolomite and felspar. All these items are available indigenously.

Alongside improvement in production and manufacturing technique, the industry has achieved appreciable success in the export field also in recent years. From a mere Rs. 5.90 million in 1967-68, the foreign exchange earning of glass and glassware more than doubled to about Rs. 12.10 million in 1968-69. There was improvement in 1969-70 also when these exports reached a level of Rs. 13.20 million. The exports further improved to Rs. 17.5 million in 1970-71, though 1971-72 witnessed a set back at Rs. 14.46 million. The export value, attained a record level of Rs. 27.88 million in 1972-73, registering an increase of more than Rs. 13 million over the previous year's performance. The share of glass in the export earning for 1972-73 was Rs. 12.68 million while glassware accounted for Rs. 15.20 million.

Among the glass varieties exported, window glass and other unworked glass, drawn or blown in rectangular shape accounted for an earning of nearly Rs. 7.70 million. Iran with a total purchase of Rs. 1.95 million was the major buyer, followed by Malaysia at Rs. 1.67 million. Thailand, Singapore, South Yemen Republic, Indonesia, Mauritius, Sri Lanka and Kenya were the other important buyers. Wired glass sheet and other cast or blended glass unworked in rectangular shape was another important variety supplied abroad, at Rs. 1.44 million. Yemen Arab Republic, Malaysia and Kuwait were the prominent buyers. Sefaty glass (toughened or laminated) was also supplied abroad to fetch Rs. 1.44 million. U.S.A., Malaysia, Australia, Thailand were the important destinations.

In the category of glassware, glass bottles, stoppers, containers and glass closures were the most active items in export trade during the year. Their foreign exchange earning was equivalent to Rs. 9.70 million. Of this, glass inners for vacuum flasks alone earned as much as Rs. 3.50 million. U.S.S.R. which purchased about 622,000 pieces at a value of Rs. 1.93 million was the major buyer. Australia, the next best market purchased 313,400 flasks at about Rs. 0.76 million. Other important purchasers for this item were the German Federal Republic, Bangladesh and Sri Lanka. Glass tableware and other articles for household purposes or for hotels and restaurants were also active in the export trade, having fetched nearly Rs. 1.00 million. Nepal with an intake worth Rs. 0.57 million was the major buyer followed by Afghanistan, Saudi Arabia, Mauritius, Malavi and Sri Lanka. In addition to these categories, a variety of laboratory glassware including ampules, glass tubes etc. were exported to several markets. Even glass bangles figured in exports during the year. These were bought by a number of countries abroad including U.S.A., U.K., Singapore, Mauritius, Nepal, Malaysia, Dubai and Afghanistan. Glass beads, imitation pearls, imitation processed and semi-processed stones manufactured by the industry were the other items exported abroad. ☐

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RADIO RECEIVING TUBES FOR EXPORT

India's export trade in electronic valves and tubes amounted to Rs. 6.3 million during 1972-73. Of this, the export contribution of radio receiving tubes was of the order of Rs. 3.2 million while thermionic cold cathodes secured Rs. 3 million.

The German Federal Republic, followed by Netherlands, Arab Republic of Egypt, Canada and New Zealand constitutes the major customer for radio receiving tubes. The U.K. purchased thermionic cold cathodes worth Rs. 1.15 million out of a total export of the item at a value of Rs. 3 million. Next to U.K., the principal customers were German Federal Republic, New Zealand, Netherlands, Hong Kong and Canada.

M/s. Bharat Electronics Limited (BEL), Bangalore, is a renowned exporter of receiving tubes from India. Their export value in the field has hit the Rs. 4 million mark per year. The value of their overseas supply in the first five months of 1973-74 has already reached Rs. 3.7 million.

About 70 types of receiving tubes were exported by the firm to as many as 22 countries the world over. The firm, in fact, manufactures 120 types of these tubes.

The Bangalore firm has also designed two types of special low power tubes which are now being manufactured essentially for export to the sophisticated countries like U.S.A., U.K., and Federal Republic of Germany. These high quality tubes are exported for use in industrial applications.

The firm is also producing gas discharge tubes for voltage regulation and voltage reference tubes. In its Receiving Tube Plant, the firm also manufactures gas discharge numerical indicator tubes as well as fluorescent types for digital readout applications.

M/s. BEL are also engaged in the production of various types of electronic equipment and components for consumption both within the country and overseas.

TRANSMISSION LINE TOWERS IN EXPORT TRADE

Among recent lines of sophisticated engineering production in India, transmission line towers have made appreciable headway in the export field. The export earning of transmission line towers and poles reached a level of nearly Rs. 49 million in 1972-73 as compared to Rs. 37.60 million in 1971-72 and Rs. 13.20 million in 1970-71, according to the Engineering Export Promotion Council, Calcutta. Iran, Thailand, Libya, Mozambique and Kuwait are among the prominent importers for the products from India. Besides physical exports, the industry is also supplying technical know-how to co-developing countries in this field.

Adding to the list of export orders received by the transmission line tower industry in India, M/s. Testeels Ltd., Commercial Mill Premises, Idgah Gate, Ahmedabad-16, have recently secured an order for supply of transmission line towers to Malaysia. Initially valued at Rs. 2 2 million, the order has now been increased to Rs. 5 million.

Besides transmission line towers, the Ahmedabad firm is engaged in the manufacture of other steel products for building structures for railways, factory sheds, warehouses, workshops, river bridges and railway signalling equipment. The firm is now expanding its activities by catering to the needs of fertilizer and petro-chemical industries. Their total sales during 1972-73 amounted to over Rs. 19 million, registering an increase of 26 per cent over those of the preceding year.

The organised sector of India's transmission line tower industry has 18 units in its infrastructure with a combined total installed capacity of 95,100 tonnes. During 1972, the production was of the order of 60 000 tonnes compared to 57,770 tonnes in the preceding year and 50,235 tonnes in 1970.

EXPORT SUCCESS IN PAINTS AND VARNISHES

India's exports of pigments, paints, varnishes and related materials rose sharply to fetch Rs. 45.57 million during 1972-73 from only Rs. 28.45 million during the preceding year. This represents an increase o about 60 per cent.

Prepared paints, enamels, lacquers, varnishes an artist colours constituted the major category of expor growth during the year 1972-73. It secured foreig exchange to the tune of Rs. 42.05 million. Of thi synthetic enamels alone fetched as much as Rs. 17.7 million. U.S.S.R. was the largest single buying marke which bought 2.78 million kgs. valued at Rs. 15.9 million. A.R.E., Iran, Abu Dhabi, Bangladesh an Fiji Islands were prominent among other buyers. Wit U.S.S.R., again occupying the leading position havin imported the bulk of supplies amounting to 1.62 millio kgs. valued at Rs. 10.41 million, varnishes earned foreig exchange at a value of Rs. 11.10 million. In terms o quantity 1.85 million kgs. were supplied overseas. Amon other markets, Nepal was the significant buyer. Next t varnishes, prepared organic pigments was the item o sizeable overseas intake during the year. It brough in Rs. 2.80 million. U.S.S.R., followed by USA, Hon Kong, Netherlands and Philippines was the principal

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market. Among other items, ready mixed paints (Rs. 1.20 million), prepared organic dyestuff pigment dry (Rs. 1.30 million), artist's colours (Rs. 1.28 million) and other paints (Rs. 5.10 million) were prominent in export trade.

In addition to the above, other categories of colouring materials and that of printing inks netted Rs. 2.20 million and Rs. 1.33 million respectively. In the former category, chrome pigments, ultramarine blue, iron blues and other inorganic colouring materials were mainly supplied to U.S.S.R., Bangladesh, Ghana, Arab Republic of Egypt and Nepal while in the latter category, printers colours, lithographic ink jelly etc. were imported by Bangladesh, Thailand, Iraq and Nigeria.

Adding to the export endeavour of the pigments and paints industry, M/s. Colour-Chem, Fort House, 221, Dadabhai Naoroji Road, Post Box 1640, Bombay-1 exported pigments, chemicals and related products to the tune of Rs. 9 million during 1972-73. The firm's products are popular in a large number of countries abroad which include even developed countries, such as, U.S.S.R. and U.S.A.

The range of manufactures of the firm covers a number of items in the line, such as, pigments, chemicals, dyes, manures, etc. The firm's products are manufactured under technical collaboration of two reputed West German firms in the line. The firm has received licence to undertake manufacture of Leomine K, a Cationic softening agent and modified urea formaldehyde resins. During the year under review, the firm introduced 15 new products into markets. Apart from this, 6 other products were manufactured under captive use as also for use of other manufacturers of dyestuffs. The firm has active expansion plans for the manufacture of phthalocyanine blue and green and the plant has been partially put into operation during the year.

WOOLLEN HOSIERY EXPORTS TO WORLD MARKETS

With an export turnover amounting to Rs. 480 million during 1972-73, India's exports of wool and woollens registered about 34 per cent increase over the export performance during the preceding year at Rs. 358 million.

M/s. Alps Knitting Works, Chowk Saidan, Ludhiana, one of the exporting firms in the Punjab region, exported woollen knitwear valued at over Rs. 1.37 million to General Currency Area during the first three quarters of 1972-73 (April-December 1972).

The firm's exports are effected to a large number of countries including the sophisticated ones. During the first quarter of the current year (1973-74), the firm booked orders over Rs. 1 million, mainly from countries in West Asia.

The export composition during 1972-73 was: Carpets, druggets and numdahs Rs. 212.50 million (44.30 per cent of the entire export value) as against Rs. 131 8 million in 1971-72; woollen hosiery Rs. 168.80 million as against Rs. 144.80 million; raw wool Rs. 60 million as compared to Rs. 35 million; blankets Rs. 3.4 million against Rs. 2.23 million and shawls Rs. 2.88 million against Rs. 1.19 million.

Federal Republic of Germany (Rs. 80 million), U.S.A. (Rs. 54.40 million), followed by U.K., Canada, Netherlands and Sweden were the significant buyers of carpets, druggets and numdahs. U.S.S.R. (Rs. 135.50 million), Poland (Rs. 14 million), Czechoslovakia (Rs. 9.40 million), Libya, Saudi Arabia and Nigeria were the prominent purchasing countries for woollen hosiery. For raw wool, Belgium and U.K. were the principal absorbing countries while for blankets Belguim, Kenya and Muscat were the leading markets. Shawls were mainly imported by Saudi Arabia, Bahrein Islands and Dubai.

During the year some new markets were also developed. These included Saudi Arabia and Nigeria for hosiery, Burma and Dubai for blankets and Yemen Arab Republic for shawls.

Export of woollen and mixed fabrics and woollen readymade garments suffered a set back during the year. The export value of fabrics came down to Rs. 17 million from Rs. 23.55 million while that of woollen readymade garments declined to Rs. 14 58 million from Rs. 19.38 million. In addition to the above items, shoddy wool, wooltops add worsted yarn knitting wool were the other items active in export trade.

SYNTHETIC ENAMELS POPULAR IN SOVIET UNION

Among a wide range of chemical and chemical products that are manufactured by India's chemical industry, synthetic enamels, although a late entrant in the export stream, have in recent years attracted growing overseas demand. During 1972–73, this single product brought in foreign exchange to the tune of Rs. 17.76 million as against Rs. 8.3 million in the preceding year. As in the previous year, during 1972-73 too, U.S.S R. retained its position of the topmost buyer, absorbing the bulk at a value of Rs. 15.90 million. During 1971-72, its purchases totalled Rs. 4.8 million. Besides U.S.S.R., Arab Republic of Egypt, Iran, Bangladesh, Kuwait, Abu Dhabi and Fiji Islands were significant among other destinations during 1972-73. Apart from synthetic enamels, India supplies overseas, enamelled iron utensils, enamelled iron fibres and other enamelled ironware. During 1972-73, Nepal Thailand, Sri Lanka, Kenya and Malaysia were the prominent buying countries for these products.

Recently, M/s. Beck and Company (India) Limited, Pimpri, Poona-18, secured a sizeable contract from U.S.S R. for the supply of synthetic enamels valued at Rs. 3 70 million. The supplies are intended for Soviet electrical manufacturers. The deliveries are expected to commence shortly. This is a repeat order secured by the Poona firm from the Soviet Union for this product. Earlier, during the last quarter of 1972-73, U.S.S.R. had placed a sizeable order with the firm at a value of of Rs 9.3 million. According to the terms of the Agreement concluded earlier, U.S.S.R. had an option for import of additional supply from the firm to a total value of over Rs. 3 million.

Besides synthetic enamels, U.S.S.R. is importing other items in the line also from the Poona firm. For instance, last year, it placed a substantial order with the firm for the supply of 3000 tonnes of terephthalic polyester wire enamel valued at Rs. 18.6 million. The firm's export list, besides U.S.S.R., covers a large number of markets abroad including developed countries like U.S.A. The firm has received awards many a time in recognition of its outstanding export performance.

During 1972-73, India's chemical and chemical products earned foreign exchange at a value of Rs. 76.45 million, registering an improvement over the export value during the previous year at Rs. 71.73 million. Of this, organic chemicals secured Rs. 28.30 million while the share of inorganic chemicals was of the order of Rs. 48.15 million.

EXPORT PERFORMANCE AND POTENTIAL

PENDING EXPORT CONTRACTS WITH ENGINEERING INDUSTRY

The total value of export contracts with India's engineering industry as by December 1972 was Rs. 1500 million, according to the information received from the Directorate General of Technical Development, Ministry of Industrial Development.

Among the major export contracts concluded during 1972-73 were those for the supply of a complete sugar mill for Rs. 45 million in Malaysia, a long-term contract for Rs. 50 million worth of storage batteries for East Europe, a series of contracts for the export of about 300,000 sports light roadster with three-speed-hubs for the U. S. market, a Rs. 20.5 million worth of order to supply ordinary roadster bicycles to Indonesia, a complete asbestos cement plant for Lebanon valued at Rs. 6 million, Rs. 5.6 million worth of three-wheelers in free foreign exchange for Bangladesh, Rs. 35 million worth deep–well turbine pumps, again in free foreign exchange for Bangladesh, Rs. 15 million worth of power station instrumentation for Malaysia and Rs 5.4 million worth of storage equipment for Arab Republic of Egypt.

Among the new engineering products exported during 1972-73 were hydraulic pumps and valves, sugar diffuser, garage equipment, single spindle automatic lathes, instruments for power station, electronic pocket calculators, transistorised power supplies and digital meters, electronic dimmer swtiches and certain types of automotive and tractor forgings.

The engineering items produced in India which have shown a consistent record of export, year to year, include automobile ancillaries, aluminium cables and conductors, bicycles and components, drop forged hand tools, diesel engines and components, transmission towers, structural farbications, dry and storage batteries and various categories of industrial machinery.

Project exports as distinct from product exports have also registered new record during 1972-73. Right from the pre-investment feasibility studies to project reporting through designing, engineering, fabrication, shipment and commissioning of complete plants, the project exports have come to assume a new significance in the context of India's export trade. An Indian firm which had earlier supplied and commissioned a cement plant in Kuwait has achieved notable progress in offering a larger cement plant in Iraq. A substantial breakthrough in the export of cement plants from India is also noteworthy. Indian firms acting singly or in consortia, have erected abroad more than 2000 kilometres of high tension and extra high tension power transmission lines so far. During 1972-73, one of them was engaged in constructing a major power transmission line valued at Rs. 60 million in Libya.

A target of Rs. 1800 million has been proposed for the year 1973-74 for export of engineering products.

EXPORT DYNAMISM IN CHEMICALS

Chemical products from India including elements and compounds, dyeing and colouring materials, pharmaceuticals and perfumery have been registering uptrend on export front in recent years. During the year 1972-73, these exports earned foreign exchange at a value of Rs. 403.63 million while in the previous year the export earning was only Rs. 354.43 million. The contribution of chemical elements and compounds to the export improvement amounted to Rs. 76.4 million in 1972-73 as compared to Rs. 72 million in the year before. The group of dyeing, tanning and colouring materials contributed Rs. 92.65 million as against Rs. 54.5 million. The export improvement in respect of medicinal and pharmaceutical products was of the order of Rs. 103.2 million as compared to Rs. 96.3 million. The export value of essential oils and perfumed materials rose to over Rs. 100 million as against Rs. 87 million in the comparable year.

In the group of chemical elements and compounds, the export performance of inorganic chemicals is particularly noteworthy. Their exports were valued at Rs. 48 million in 1972-73 as against Rs. 38 million in the year that preceded. The contribution of organic chemicals, however, fell marginally to Rs. 28 million from Rs. 33 million. The major products supplied by India in the organic chemicals group related to benzene (Rs. 1.8 million, mainly to U.K.), butyl alcohol (Rs. 1.82 million to Netherlands), anthraquinone (Rs. 4.7 million, mainly to Italy), benzanthrone (Rs. 1.47 million, mainly to the German Federal Republic, Switzerland and U.S.A.), beta ionone (Rs. 8 million worth to U.S.S.R.) and beta hydroxy napthoic acid (Rs. 2.7 million, essentially to U.S.A.). In the inorganic group hydrochloric, sulphuric, and boric acids figure prominently. Of the nearly Rs. 10 million worth of export market for hydrochloric acid, Dubai, Saudi Arabia and Abu Dhabi absorbed the bulk. Abu Dhabi, Bahrein Islands and Dubai are the important customers for sulphuric acid which earned Rs. 1.2 million in 1972-73. Apart from acids, the other inorganic chemical products exports from India include metallic oxides used in paints, metallic salts and peroxy salts. Zinc oxide is prominent line of overseas supply in the oxides group, having secured foreign exchange worth Rs 9.4 million in 1972-73, Thailand, Congo Peoples Republic, Indonesia, Belgium being the important buyers. Bleaching powder, potassium chlorate, aluminium sulphate and sodium bicarbonate are the important metallic salts for export in the inorganic chemicals group.

The export trade in pigments, paints and varnishes has also looked up in 1972-73 in which year the export earning was of the order of Rs. 45.6 million as compared to Rs. 28.5 million in the preceding year. Synthetic enamels fetched Rs. 17.8 million in 1972-73, with U.S.S.R., as the leading buyer (Rs. 16 million). The U.S.S.R. was again the best buyer in varnishes at an import value of Rs. 10 million while the total export earning of varnishes amounted to Rs. 11 million. Synthetic organic dye-stuffs, natural indigo and colouring lakes constitute another line of export promise. These products fetched foreign exchange worth Rs. 45.22 million in 1972-73 as compared to Rs. 24.8 million in 1971-72. Acid dyes contributed Rs. 3.4 million while basic dyes earned Rs. 4.4 million and direct as well as sulphur dyes fetched Rs. 11.24 million. Exports of lakes, solving dyes and organic pigments amounted to Rs. 8 million while reactive dyes and azoic dyes secured Rs. 6 million. Another variety, namely, vat dyes netted Rs. 8.9 million.

The year 1972-73 witnessed export improvement in medicinal and pharmaceutical products also. Penicillin, streptomycin and other antibiotics contributed Rs. 10.72 million worth of export effort. The major customers included U.S.A. (particularly for oxytetra cyclin preparations of which the U.S. market imported worth Rs. 3.9 million), Philippines, Sri Lanka, Hong Kong, Korea Republic and Tanzania Republic. Vegatable alkaloids, salts and other derivatives have had a Rs. 12 million export market in 1972–73. Principal customers were Czechoslovakia, U.S.S.R., U.S.A., German Federal Republic and Bulgaria.

Medicaments constitute, however, the major group of export trade by the India's pharmaceutical industry. Their export value in 1972-73 was of the order of Rs. 70.47 million. Ayurvedic and Unani medicines contributed Rs. 2 million. Proprietory patent medicines, ointments for bronchital infections and homeopathic medicines are among the other medicaments sought abroad.

Essential oils and perfume materials constitute yet another group of chemical exports from India. The total earning of this group was Rs. 40 million in 1972-73. Sandalwood oil is an important line of supply. It earned Rs. 28 million through its exports for 1972-73. More than one-third of the total exports were absorbed by the U.S. market. U.K., U.S.S.R., Japan, France, Switzerland and Netherlands were the other buyers. Apart from Sandalwood oil, essential oils supplied abroad include lemon grass oil, palma rosa oil and vetiver oil.

India-made agarbattis had a Rs. 16 million export market during 1972-73. These incense sticks were supplied to nearly 95 countries, the more important ones being U.S.A., Dubai, Liberia, Nigeria and Singapore. Besides agarbattis, a variety of perfumery and cosmetics are also prominent in the export line, such as, brilliantines, shaving creams, hair oils, shampoos, talcum powder, perfumes and spiritous toilets.

Soaps, cleansing and polishing preparations also contribute their mite to the country's export endeavour. They have earned foreign exchange worth nearly Rs. 18 million during 1972-73. Synthetic detergents, alone fetched Rs. 9 million of which U.S.S.R. imported worth Rs. 8 million.

TRADE POSITION WITH ECAFE

The ECAFE (Economic Commission for Asia and Far East) constitutes the prime recipient of Indian exports as compared to the other regions of the world. Compared to India's export trade of Rs. 4695 million with East Europe, Rs. 3035 million with North America, Rs. 2217 million with the European Common Market countries and Rs. 2053 million with European Free Trade Area countries, the export effort to ECAFE amounted to as much as Rs. 5554 million in 1972-73. The export value in this year has registered a sizeable improvement as compared to Rs. 4228 million worth export supply to the region in 1971-72.

Japan is indeed the best customer in the ECAFE region. This market improved its offtake to the level of Rs. 2168 million in 1972-73 as compared to Rs. 1817 million in 1971-72. The next best importer was Bangladesh at Rs. 1572 million as against Rs. 423 million. Other important buyers from India in the ECAFE region during 1972-73 were Nepal (Rs. 350 million), Iran (Rs. 246 million), Hong Kong (Rs. 197 million), Singapore (Rs. 178 million), Afghanistan (Rs. 122 million), Malaysia (Rs. 93 million), New Zealand (Rs. 82 million), Sri Lanka (Rs. 79 million), Thailand (Rs. 57 million), Indonesia (Rs. 53 million), Burma (Rs. 43 million), Philippines (Rs. 15 million) and the Republic of Korea (Rs. 12.6 million).

In the year 1972-73, Indian exports to some of the ECAFE markets declined–Australia (Rs. 259 million against Rs. 279 million), Burma (Rs. 43 million against Rs. 107 million), Sri Lanka (Rs. 79 million against Rs. 212 million), Peoples Democeratic Republic of Korea (Rs. 8.45 million against Rs. 11.70 million), Malaysia (Rs. 93 million against Rs. 117 million), New Zealand (Rs. 82 million against Rs. 103 million) and Republic of Korea (Rs. 12.6 million against Rs. 63 million).

Apart from ECAFE countries, the other Asian and oceanian countries and Antarctic and arctic regions have imported more from India during 1972-73 at Rs. 726 million as compared to Rs. 625 million in the year that preceded. Among these importers the most important ones during 1972-73 were Kuwait (Rs. 148 million), Saudi Arabia (Rs. 121 million), Iraq (Rs. 100 million), Dubai (Rs. 18 million), Bahrein Islands (Rs. 31 million), Muscat (Rs. 24 million), Jordan (Rs. 25 million), Lebanon (Rs. 20 million), Qatar (Rs. 32 million), Syria (Rs.26 million) and Yemen Peoples Republic (Rs. 26 million).

EXPORT PERFORMANCE OF RAYON AND SYNTHETIC TEXTILES

India's rayon and synthetic textiles have witnessed a remarkable uptrend in the first five months of 1973-74 (April-August, 1973) as compared to the corresponding period of the preceding year. The export value was Rs. 88 million and Rs. 35 million respectively. The growth rate in the export trade was as much as 130 per cent.

More than two thirds of the rayon and synthetic textiles fabrics is accounted for filament rayon fabrics. The offtake of these fabrics has proved encouraging in recent years. Afghan market is largely responsible for the increase in the exports. Spun rayon fabrics constitute another area of export expansion. Shirtings represent the major item in this variety. Sharing more than one fourth of the total exports, nylon fabrics form the second largest item, next to filament rayon fabrics. The export trade for this item has also been registering substantial increases month after month. Polyester and polyester blended fabrics have also improved their overseas supply position in recent months.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

RECENT TRENDS IN INDUSTRIAL DEVELOPMENT

Notwithstanding the sluggishness of commodity production and general rise in prices, the Indian economy has revealed trends of general recovery in industrial production in recent times. Compared to a 2.5 per cent in 1970-71, the growth rate in industrial production was around 4.5 per cent in 1971-72 which rose to 7.3 per eent in the first few months of 1972-73, according to the information received from the Directorate General of Technical Development, Ministry of Industrial Development of the Government of India.

Better utilisation of capacity is said to be one of the important reasons for the general recovery in industrial production. This was the result of Indian Government's decision in early 1972 to accord approval for additional manufacturing capacity up to 100 per cent of the existing capacity in selected industries by maximum utilisation of installed capacity without the formality of industrial licence provided that the increase was brought about without any import of capital goods.

A wide spectrum of industries has contributed to the acceleration of industrial production during 1972-73. These industries include industrial and electrical machinery, transport equipment, nitrogenous fertilisers, viscose staple fibre, nylon filament yarn, polyester fibre and automobile tyres and tubes, drugs and medicines, lead, zinc and antimony, steel castings, heavy structurals, cast iron spun pipes, steel pipes and tubes, ball and roller bearings and machine tools.

Apart from the fact that several industries have registered improvement in production, quite a few new items were manufactured for the first time in the country during the year 1972-73. Such items include web offset printing machinery, calcination plant, razor blade manufacturing machinery, ball valves and diaphragm valves, automatic day and date wrist watches, data entry device, sliprings, test benches, miniature circuit breakers, neon lamps, photo cells, hybrid circuits, aluminium metallised film capacitors, insulated type of resistors, close circuit television systems, portable solid state oscilloscopes, storage type of oscilloscopes, power meters, magnesium metal, aluminium bearing metal alloys, clectrolytic manganese dioxide, sterile disposable transfusion incusion sets, crystal glasswere and so on. The manufacture of such new items has considerably helped reduce the import bill.

Consequent upon the improvement in production, the engineering sector has recorded increase in its export earnings. The estimated exports of the engineering industries during 1972-73 were placed at Rs. 1400 million compared only to Rs. 1260 million in 1971-72. The export value of chemicals and allied products also has picked up to the tune of Rs. 820 million compared to Rs. 604 million in 1971-72.

The major industrial sectors for which the Directorate General of Technical Development issued letters of intent for establishing new undertakings included metallurgical industries, electrical and transport equipment, industrial machinery, certain engineering industries and a broad range of chemical industries as well as food processing units. Substantial capacities were also licensed during 1972-73 in a number of fields, such as, cement, power, calcium carbide, industrial gases, automobile tyres and tubes and automobile ancillaries. The total number of foreign collaboration cases approved in 1972 were 256 of which 36 involved financial participation and the rest were concerned with the transfer of technical know-how and payment of royalty or technical know-how fees, according to the information received from the Directorate General of Technical Development.

A modified industrial licensing policy was announced during 1972-73 in order to promote the pace of industrialisation in the economy. A consolidated list of industries was published in which the larger industrial houses as well as branches and subsidiaries of foreign companies could participate. The list includes core industries that are significant to the Indian econmy, industries having direct links with such core industries as also industries with a long term export potential. Considering the improvement in industrial production and export performance, it is felt that there could be basis for cautious optimism as to the growth of industrial production in times to come.

FACTS ON SWITCHGEAR INDUSTRY

With 50 units active in the manufacturing field, the switchgear industry in India has established itself in the production of a wide variety of switchgear and control gear items including circuit brerkers, motor starters, contactors, motor control penels, isolators, current and potential transformers, switches, switchboards, control penels, fuses, lightning arresters and relays. The total production of swtichgear and control gear items in the country's organised sector was valued at Rs. 500 million in 1972 as compared to Rs. 423 million in 1970.

An important development in the switchgear industry in the country relate to the decision taken by the Gevernment to allow some of the manufacturing firms to enhance their production capacity for fuller utilisation of plant and machinery. To facilitate the fuller utilisation of raw material and components, allocations have been made for additional capacities.

Among new items the production of which has started during 1972, thyristors deserve special mention. It is expected that the voltage of transmission lines would be stepped up to 400 KV in the near future. Fresh capacities are sought to be created for swtichgear items for this voltage rating also. M/s. Bharat Heavy Electricals Limited (Hyderabad) in the public sector is already geared up to take up the manufacture of 400 KV circuit breakers in collabroation with a Swedish firm. Another public sector undertaking has been identified to manufacture current and potential transformers up to 400 KV capacity.

Moulded cast circuit breakers which is the latest trend in the L.T. circuit breakers technology is expected to be produced in India shortly in collaboration with reputed foreign firms. Industrial licences and letters of intent have been granted to six firms for the manufacture of these circuit breakers which would replace the conventional type of L. T. air circuit breakers now being produced indigenously.

Some of the switchgear manufacturers are engaged in advance research and development work and it is considered as a happy development in view of the fact that switchgear and control gear technology is highly sophisticated involving changes from time to time. One of the firms has recently developed a prototype of static power converter and static inverter controls for motor drivers. The National Research Development Corporation has claimed that technical know-how could be supplied for the manufacture of silicon diodes up to 200 amps. Currently, silicon diodes are being manufactured within the country with the help of imported technology.

Switchgear items contribute sizeable volume of foreign exchange in the country's export effort. The export of items, such as, motor starters, iron clad switches, L. T. and H. T. circuit breakers and switchgears increased from Rs. 3.34 million in 1969-70 to Rs. 8.3 million in 1971-72. Electrical power machinery and switchgear was of the order of Rs. 56 million as against Rs. 47 million in the preceding year. The prominent items of export in this group were oil circuit breakers, motor starters for A. C. motor running by constant speed up to and above 660 V, motor control gears and motor starters, switchboard control panels, relays and parts of swtichgears.

The major importer of motor starters was Malaysia while Libya, Kuwait, Malaysia, Sri Lanka and Muscat were among the buyers of switchboards and control panels.

PROFIT POSITION OF INDIA'S PUBLIC SECTOR

For the first time during 1972-73, state-run enterprises in India as a whole made a net collective profit of Rs. 92.70 million. It is not the volume of this profit which is significant, it was made against a background of repeated losses over the years. The losses were particularly depressing in 1971-72 when they touched the figure of Rs. 144.20 million, compared with Rs. 91.60 million for 1970-71 and Rs. 85.80 million for 1969-70.

More than 60 companies earned a net profit of Rs. 904.50 million, 16 of them made a profit of more than Rs. 10 million each. Three or four companies have, however, suffered losses.

In 1972-73, the earnings of 60 profit–making enterprises (a total of Rs. 904.50 million) were counterbalanced by a net loss of Rs. 811.80 million of about 40 enterprises. A substantial portion of these losses was contributed by three large companies - Hindustan Steel (Rs. 277.60 million), Heavy Engineering Corporation (Rs. 145.40 million) and Neyveli Lignite Corporation (Rs. 126.40 million).

Profits and losses constitute only one aspect of the functioning of public sector enterprises. What is not so well-known perhaps is that they make sizeable contributions to the Central Exchequer by way of interest, dividends and corporate income-tax. These contributions were also the highest in 1972-73 and reached the figure of Rs. 195.7 million.

Apart from the profit making aspect, the expansion of the public sector has played a vital role in India's industrial development. Indeed, massive public investment in the difficult fields of basic industry and machine building was instrumental in modernising the country's industrial structure. The setting up of new capacity in these challenging fields often involved the tying up of sizeable investment resources over fairly long gestation periods.

Were it not for state initiative in establishing industrial capacity for steel making, heavy industrial and electrical equipment, machine building, petroleum and petroleum products and mining, the domestic industry would have been scarcely more modern now than it was at the time of independence. Nor would the nation have had an adequate industrial base for defence.

These gains are apart from other highly desirable social objectives which public enterprises have served, such as, heavy outlays in the form of residential colonies and housing for their staff, education, medical facilities and other welfare schemes. In 1971-72, the total expenditure on these facilities by about 93 enterprises amounted to Rs. 340 million. What is more, public undertakings-both departmental and non-departmental-employ nearly half the total work force in the organised sectors of activity and public investment has become the most important element of capital formation.

PRODUCT DEVELOPMENT IN COIR INDUSTRY

Rubberised coir, needled coir pads and coir tufted carpetting in PVC base are some of the new products which have been developed by the coir industry in the wake of technological advances in recent years. However, to sustain the consumers interest, product development is a continuous process. In an effort to explore the prospects of product development by improving the texture of coir and use of the refined fibre for products of novel appearance, research conducted by the Coir Board of India has indicated that products of novel appearance and improved texture could be made out of coir yarn spun from coir refined by specific chemical treatment.

Hardness and harshness are the main drawbacks of coir. These are attributed mainly to substantial quantities of incrustant materials in the coir fibre structure. The research conducted by the Coir Board of India (Ernakulam) has shown that treatment of the fibre with caustic soda solution of specified strength is very effective to leach away the fibre ingredients responsible for the hardness and harshness of the fibre. Coir fibre treated in the caustic soda solution in the cold for a period of 16 hours and washed free of alkali could be spun into single strand coir yarn, having a texture resembling to that of the coarse woollen yarn. Softened fibre with optimum moisture content offers little resistance to twisting and single strand yarn spun out of the material is observed to retain the twist with comparative ease. The chemically treated material has greater absorbancy, facilitating better dye uptake thereby improving the quality of the dyeings.

Experiments on use of single strand yarn spun out of softened coir fibre have revealed that the material could by processed on the handlooms with suitable adjustments for producing kayarool carpets, coir webbings and coirsynth fabrics.

Kayarool carpets are woven on the normal carpet looms, similar to those used for weaving mourzouk carpets, using thin aloe, sisal or jute strands as the warp. These carpets have a much more supple feel compared to the traditional mourzuks. Sharp outlines are possible in design weaving. Using folded yarn in different shades, special pattern effects can be produced in the material.

Single strand coir yarn spun out of softened coir has the right texture for being processed on the type looms for manufacture of webbings suitable for finishing cut edges of mattings. Coir webbings have a special advantage over convertional hessian webbings in that it has a much better wearing life with increased resistance against degradation under moist conditions while offering a material of adequate flexibility to cover the cut edges of the matting.

The improved feel and texture of single strand yarn endears its use for weaving furnishing materials for use as window and door curtains. Owing to the thin structure of the yarn, the normal coir handlooms are not very much suited for processing the yarn as the fibre protrusions hinder the weaving operation due to resistance encountered in moving the reed along the length of the warp sheet and also in the formation of the shed. To overcome this technical draw-back, a loom with simpler construction and refined heddles made out of specially looped polypropylene yarns has been evolved. A new principle of heddles control has also been incorporated on the loom facilitating ease of of treading. Trial weaving conducted on the loom has indicated the prospects of evolving a novel fabric which could find use as window or door curtains. The texture of the fabric could be further improved on use of synthetic yeans alongwith softhened coir yarns in the weaving process.

Experiments have also been conducted by the Board to explore the prospects of weaving light-weight fabrics having coir pile structure. Use of thin polypropylene yarns for the base fabric and soft spun coir yarn for the pile structure has been observed to yield novel pile carpets, having a weight considerably lower than the traditional carnatic carpets of the industry. Sample pile carpets with polypropylene filament yarn as the base fabric and softened single strand coir yarn for the pile structure, are being woven to examine the possibility of improving the texture of the fabric.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

ARC CARBONS

The National Physical Laboratory (NPL), New Delhi, has successfully developed arc carbons which are used for projecting a movie on the screen.

As a result of twenty years experience in the field of carbon technolgy, the NPL has acquired indigenous proven know-how for various carbon products, such as, carbon electrodes, carbon blocks, brushes and cine arc carbons using indigenous raw materials and equipment.

The cross section of a cinema arc carbon reveals that the central core which is the source of light emission is surrounded by a shell. The composition of core and shell are different from each other and hence the raw materials for both are processed separately. The composite slug of shell and core materials is made by mixing separately binders to the dry core and shell mixes. Composite slug is extruded in an extrusion press after which carbon rods are cut to size, baked, copper plated and polished.

To ensure the proper quality production, strict quality control measures are to be taken at different stages from the time of delivery of rawm aterials to the plant until the moment that a finished carbon is packed.

The same process can be employed with certain minor modifications for the manufacture of process carbons (search light carbons, photo carbons etc.) and is included in this know-how.

At present, the consumption of the product (carbon electrodes) is estimated at 13 million pairs per annum. This will gradually increase as more and more theatres come into existence. Besides indigenous consumption, there will be good scope for export also.

At the moment, in India two firms are engaged in production of projector carbons but their total production capacity is not sufficient to meet the country's requirements.

NPL itself is producing carbons on semi-commercial scale. They have sold carbons worth about Rs. 0.5 million to various private enterprises within last 5-7 years. Consumers acceptability reports confirm that the performance of NPL carbons is at par with those manufactured according to foreign technology.

Raw materials required for the production of the product are calcined petroleum coke, carbon black, coaltar pitch, rare earth salts, graphite powder, copper anodes, sulphuric acid, copper sulphate and anthracene oil. All of these are available indigenously.

The major items of equipment required are jaw crusher, pulverizer, edge runner, conical mixer, sintering furnace, oven, sieve shaker, sigma blade mixer, roll mixer, slug press, extrusion press, baking furnace, polishing machine, electroplating plant, x-ray testing machine and cutting machine.

Besides this, some more laboratory and handling equipment are required. All these machines are either readily available or can be fabricated indigenously.

GUT POLISHING MACHINE

The quality as well as the value of musical strings and sports guts depends much on their polish.

In order to give better effects, the Central Leather Research Institute (CLRI), Madras, has now developed a design for making gut polishing machines which will be a boon to manufacturers of sports guts and musical strings as at present polishing of musical strings and sports guts is done only manually. A prototype has also been made and can be demonstrated to interested parties by CLRI.

The machine can polish guts of 5 meter lengths, 3 to 12 numbers depending on the number of spindles provided. It can also be used for manufacturing sports guts of continuous legnths with certain modifications.

Approximately 2 HP (total) of power is required and the machine can operate on single phase, 220 V. Approximate area required for accommodating the machine is 3 sq. meters.

The raw materials required for fabricating gut polishing machines are steel structurals, gear boxes, pulley drives, nuts, bolts and other fixtures, few fraction H.P. motors, electrical starter and switches. All are easily available. No imported components are involved.

Polishing machines for musical strings and sports, do not seem to be imported. The CLRI design should, therefore, of great utility for large scale manufacture of quality musical strings and sports goods. They can have the machine fabricated easily by any good engineering firm after obtaining the design from CLRI through National Research Development Corporation of India, 61, Ring Road, Lajpat Nagar III, New Delhi 110024.

COMPOSITION OF INDIA'S IMPORT TRADE

(Rs. in Million)

Commodity	1972-73	1971-72
Dairy Products and Eggs	**213.30**	**208.15**
a) Milk and cream	179.45	189.90
Cereal and Cereal Preparations	**807.80**	**1312.00**
a) Wheat	481.60	1026.00
b) Rice	107.00	180.75
Fruits and Vegetables	**533.00**	**378.40**
a) Raw cashew	318.00	279.00
b) Dried fruits	121.20	57.80
Oil seeds, oil nuts and oil kernels	123.15	105.25
Textile Fibres and Their Waste	**1146.20**	**1382.30**
a) Wool and other animal hair	117.00	142.30
b) Cotton	908:85	1133.90
Crude Fertiliser and Crude Minerals	**372.55**	**364.25**
a) Fertiliser, crude	111.15	105.70
b) Sulphur and unroasted iron pyrites	117.00	118.40
c) Crude asbestos	101.55	74.95
Petroleum and Petroleum Products	**2040.40**	**1941.40**
a) Petroleum, crude and partly refined	1448.30	1474.75
b) Petroleum products	592.00	466.65
Animal oils and fats	90:35	179.15
Fixed vegetable oils and fats	153.60	281.70
Chemical elements and compounds	888.75	718.50
Medicinal and pharmaceutical products	229.45	265.55
Fertiliser, manufactured	899.50	812.00
Paper, paperboard and manufactures thereof	307.25	349.20
Pearls and precious and precious stones	416.00	263.35
Iron and Steel	**2171.40**	**2376.00**
a) Ingots and other primary forms	93.85	126.90
b) Iron and steel bars, rods, angles, shapes and sections	299.95	347.65
c) Universals, plates and sheets of iron or steel	1348.95	1422.00
d) Hope and strip of iron or steel	117.35	177.80
e) Tubes, pipes ahd fittings of iron or steel	220.55	174.30
Non-Ferrous Metals	**1016.20**	**1024.00**
a) Copper	486.50	512.15
b) Nickel	74.70	63.60
c) Lead	103.50	77.75
d) Zinc	209.60	176.95
Machinery, Other Than Electric	**2849.75**	**2708.60**
a) Power generating machinery	326.85	298.20
b) Agricultural machinery and implements	170.80	256.00
c) Metal working machinery	285.25	242.30
d) Textile and leather machinery	207.60	155.60
e) Machines for special industries	300.65	294.80
Electrical Machinery, Apparatus and Appliances	**1239.90**	**1051.35**
a) Electrical power machinery and switchgears	489.15	389.75
b) Equipment for distributing electricity	183.50	153.35
c) Telecommunication apparatus	238.30	197.20
Transport Equipment	**871.00**	**945.95**
a) Railway vehicles	202.00	199.35
b) Road motor vehicles	306.20	373.70
c) Aircraft	331.95	351.10
Professional, Scientific and Controlling Instruments, Photographic and Optical Goods, Watches and Clocks	**261.85**	**241.35**
a) Scientific, medical, optical, measuring and controlling instruments and apparatus	139.10	130.30
b) Photographic and Cinematographic Supplies	113.40	100.15
Total including other items	**17967.35**	**18245.40**

Source : Director General of Commercial Intelligence and Statistics, Calcutta.

PROGRESS OF SHIP-BUILDING INDUSTRY

India's shipbuilding industry has come of age. Ranking sixteenth among the maritime nations of the world, India has an operative tonnage today of 2.16 million GRT as compared to only 192,000 GRT in 1947. Additionally, 1.5 million GRT is on firm order. The industry comprises shipbuilding and repairing units in the public as well as in the private sectors. Of the total tonnage, the units in the public sector account for about 47 per cent which comes to about 1.2 million GRT. The industry today handles about 20 per cent of maritime trade and operates on almost all the important overseas trade routes. In the public sector, there are seven units engaged in shipbuilding and repairing activities. In the private sector, there are several small shipyards in the country capable of constructing harbour crafts and inland vessels and some of these have a potential capacity for building small ocean going ships.

Among the three public sector units on the west coast, M/s. Mazagon Docks (Bombay), have six building berths and it has constructed ships up to 150,000 DWT. It has a capacity to build passenger/cargo ships, trawlers and barges, launches, dredgers, tugs, warships, floating cranes and docks. During 1970-71, it constructed new ships at a cost of Rs. 111.68 million while its ships repairing turnover totalled Rs. 45.80 million. Goa Shipyard, an another unit in public sector on the west coast, is a subsidiary of M/s. Mazagon Docks Ltd. It has a capacity to build self-propelled ore barges up to 1,000 DWT and fishing and harbour crafts.

The Cochin Shipyard, the third on the west coast is designed to have two docks, one for building ships up to 85,000 tonnes DWT and another for the purpose of repairing ships of sizes up to 100,000 tonnes DWT. It is mainly engaged in the construction of bulk carriers. The shipyard is under construction presently in technical cooperation with a Japanese firm of repute in the line and it is expected to be completed by October 1975. On completion and in full production, the shipyard is expected to build two ships every year of 66,000 to 85,000 tonnes each. The Cochin Shipyard authorities have concluded a formal agreement with a British firm, M/s. Scott Lithgow Limited of Port Glassgow, Scotland to build bulk carriers with a capacity of 75,000 DWT. The Panamax bulk carrier, to be built in collaboration with the British firm, will be the largest ships to be constructed in the country so far. The ships to be built at the shipyard will follow the design of Panamax bulk carriers ordered earlier by M/s. Shipping Corporation of India, but will be modified to cover the use of indigenous materials and the installation of indigenously available equipment. The first ship of this type is expected to be launched in 1976 and to be delivered in the following year.

On the east coast, M/s. Hindustan Shipyard Limited, Visakhapatnam, M/s. Garden Reach Workshops Limited, Calcutta (West Bengal) and M/s. Central Inland Water Transport Corporation Limited (CIWTC), Calcutta are the shipbuilding and repairing units in the public sector.

M/s. Hindustan Shipyard, Visakhapatnam has to its credit construction of ships up to 13,000 DWT and has a capacity to build general cargo ships and small vessels. Originally set up in 1941, the unit was brought under public sector in 1952 to construct ships of different types, but in actual practice, it has been building mainly overseas liner vessels. Recently, it has accepted orders for building multi-purpose ships of about 21,500 DWT each. Its annual ship-building capacity has been estimated at 3 ships and is expected to go up to a level of 6 ships per annum. The shipyard, so far, built and delivered 60 vessels of different sizes, aggregating about 510 000 DWT. During 1970-71, the shipyard constructed new ships at a cost of Rs. 81.85 million.

M/s. Garden Reach Workshops, Calcutta, have a capacity to build coasters, inland water transport vessels, self-propelled hopper barges, launches, dredgers, tugs, harbour crafts for defence and customs etc. The capacity is being expanded to build ocean going vessels of about 15,000 DWT and the Workshop is expected to deliver 2 to 3 ships during the fourth plan period. Besides ship building, the workshop's activities also cover ship repairing and general engineering and miscellaneous work. For instance, during 1970-71, they were able to undertake new construction of ships amounting to over Rs. 56 million while their ship repairing work and general engineering and miscellaneous works yielded an additional income of Rs. 20.50 million and Rs. 73.20 million respectively. M/s. Central Inland Water Transport Corporation (CIWTC), Calcutta, operating under Ministry of Shipping and Transport, are also engaged in the line. During 1970-71, the Corporation's

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turnover through construction and repairs of ships amounted to Rs. 11.15 million. Besides these major public sector undertakings, the Government Marine Dockyard at Port Blair is currently constructing powered boats, dumb barges and pontoons.

The Government of India propose to raise the country's shipping tonnage to 10 million GRT by the end of the Fifth Five Year Plan. When the target will be achieved, a considerable outgo of foreign exchange to foreign shipping companies will be saved. Simultaneously, earning by carrying a greater percentage of the country's overseas cargo in Indian ships will be increased. During 1970-71, the gross earning of Indian ships in overseas trade amounted to Rs. 1680 million.

Apart from making strides in shipbuilding, the industry simultaneously strived vigorously for major ports development in the country. Currently, about 95 per cent of the country's trade is carried on through sea. Under the Fourth Plan, an outlay of about Rs. 3600 million was allocated for massive port development programme which aimed at provision for deeper draughts at the ports and for introduction of container facilities to keep the industry abreast of modern technology in shipping. Presently, Vizag port is under expansion and it is to be the first to handle 10,000 DWT vessels. The loading rate at the port is to increase from about 20,000 tonne per day to about 10,000 tonnes a day. During 1971-72, the major ports in the country handled traffic at 60 million tonnes. By the end of 1973-74, it is expected that this traffic would reach around 66 million tonnes. Among the projects of port expansion, the Calcutta port (Haldia Project) envisages the construction of six berths within an enclosed dock. The port expansion scheme at Bombay is to provide eight additional berths. The construction of outer harbour at Madras consists of an oil berth and an ore berth. The oil berth was recently commissioned and it has been designed to provide facilities for oil tankers of 77,000 DWT initially and 100,000 DWT ultimately. The mechanised ore handling scheme at Madras Port is intended for handling 5 million tonnes of iron ore per day to start with and 8 million tonnes later at a rated capacity of 8,000 tonnes per hour.

The ship repairing industry grew out of the need for expansion of shiprepair and drydock facilities in the country to ensure efficient and economic maintenance of ships. The industry has potential capacity to earn and save foreign exchange. Its earning from repairs carried out to foreign ships constitute foreign exchange earning while similar earning from Indian ships constitute foreign exchange saving. Presently, there are about 18 ship repairing undertakings in the country. Of these, five are in the public sector and the rest are in the private sector. The public sector units are M/s. Mazagon Docks Limited, M/s. Goa Shipyard Limited; M/s. Hindustan Shipyard Limited, M/s. Central Inland Water Transport Corporation and M/s. Garden Reach Workshops Limited. They undertake ship repairing activities of both, the domestic as well as foreign ships and vessels, besides their regular activity of shipbuilding. During 1970-71, Mazagon Docks repaired 131 foreign ships and 137 Indian ships while M/s. Hindustan Shipyard repaired 11 ships and 58 ships repectively. The performance of other public sector undertakings during the year was: 16 ships (foreign) and 100 ships (Indian) by M/s. Garden Reach Workshops and 45 ships and 59 ships by M/s. Goa Shipyard Limited. The foreign exchange earning of these undertakings through repairs of foreign ships was: M/s. Mazagon Docks Rs. 18.78 million; M/s. Hindustan Shipyard Rs. 338,000; M/s. Garden Reach Workshops Rs. 321,000 and Goa Shipyard Rs. 143,000.

In the field of overseas shipping, there were 18 undertakings engaged in the line as on 30-6-1972. Of these, 3 are in the public sector, namely, M/s Shipping Corporation of India, M/s. Mogul Lines Limited and M/s. Jayanti and the rest 15 are in the private sector. Shipping Corporation of India, in the public sector, has in recent years, have grown to be one of the biggest shipping lines of the world. The Corporation's shipping tonnage has risen year after year and at the beginning of 1972-73, it stood at 1.38 million GRT. It has 39 more ships on order aggregating 1.64 million tonnes DWT.

India's shipbuilding and shipping industry has to play a big role in the country's growing economic activity in the coming years, particularly, in the context of country's consistently expanding foreign trade and internal trade. The industry's contribution in regard to fulfilment of growing Defence requirements of the country is equally noteworthy. ☐

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OVERSEAS DEMAND FOR INDIAN POWER CABLES

India's wires and cables industry has not only attained capability to meet growing domestic demand but also to spare sizeable surplus for export. Included in the priority sector, the industry secures growing volume of foreign exchange every year. The year 1972-73 witnessed the exports reaching a new high at Rs. 126 million, according to the Engineering Export Promotion Council, Calcutta. During the preceding year, the exports amounted to Rs. 112.50 million. Interestingly, the exports rose to these levels from only Rs. 16.77 million in 1967-68.

Among the varieties of cables and wires sought by the overseas markets in large quantities, insulated cables and wires and power aluminium conductors are prominent. U.S.S.R., followed by Iran, Sri Lanka, Qatar, Federal Republic of Germany, Arab Republic of Egypt, Tanzania, Australia and Kuwait are the leading destinations.

M/s. Indian Cables Company Limited (INCAB), 9, Hare Street, Calcutta, contributed Rs. 16.60 million to the export effort of the wires and cables industry during 1972-73. Since it entered the export field in 1967, the firm's total export business upto March, 1973 crossed the Rs. 60 million mark.

The firm's products are much in demand in West Asia, particularly in Kuwait, Abu Dhabi, Jordan, Sudan and Mauritius.

The range of cables and wires manufactured by the firm includes PVC power cables, PVC insulated self-bearing cables, PILC cables for power transmission and distribution, heat–resisting PVC power cables (in the range from 1.5 mm^2 to 1600^2 mm^2 upto 1.1 kv grade) and transposed conductors. The Calcutta firm, for the first time in India, manufactured PVC insulated self-bearing cables and saved considerable sums of foreign exchange by supplying those to M/s. Hindustan Copper Corporation, Khetri which had initially considered the import of these from France. INCAB, during the year under review (1972-73), has also developed some new varieties of cables. These are airport lighting cables, radar cables, multi-core data transmission cables and precipitator cables.

Apart from exporting wires and cables to markets abroad, the firm also supplied a variety of cables to a number of domestic firms, such as, M/s. Hindustan Copper Corporation, Khetri (Rajasthan), M/s. Bhaba Atomic Research Centre (BARC), Rajasthan Atomic Power Projects, M/s. Heavy Electricals (India) Limited, Bhopal and U.P. State Electricity Board for Ramganga Hydel Power Station.

In the organised sector during 1972, AAC/ACSR conductors, winding wires, PILC power cables, PVC power cables, PVC/VIR cables, dry core cables, coaxial cables and bare copper conductors were produced by the industry and total production during the year was estimated at Rs. 1696 million as against Rs. 1434 million in the preceding year.

STEEL PIPES AND TUBES FOR EXPORT

M/s. Bharat Steel Tubes Limited, 14-15, Connaught Place, New Delhi, is mainly engaged in the manufacture of steel tubes and pipes, both of black and galvanised variety. The firm has an export record of Rs. 12 million (1972-73). Its steel tubes and pipes are in growing demand in overseas markets, particularly the U.S.A.

The firm manufactures steel tubes and pipes of various sizes and diameters for gas, water, steam, oil and petroleum. The pipes are produced according to the specifications of American Petroleum Institute (API). The firm manufactures these products in technical collaboration with a well renowned US firm in the line. API has granted certificate to the Indian firm to use API monogram which certifies the quality for high-test pipelines.

As a step towards diversification, the firm has been recently granted a letter of intent by the Government of India for the establishment of a project in Maharashtra for the manufacture of forged hand tools at an installed capacity of 5000 tonnes per annum.

India exports sizeable quantities of tubes, pipes and fittings of iron and steel. The exports have registered steady increase from year to year—Rs. 111.80 million in 1972-73 as against Rs. 108 million in 1971-72 and Rs. 106.60 million in 1970-71.

During 1972-73, galvanised tubes and pipes of iron and steel constituted the largest single item of sizeable export earning which secured as much as Rs. 56.66 million. U.S.S.R. was the leading importer, having purchased worth Rs. 11.95 million, followed by Saudi Arabia at Rs. 8.45 million, Australia at Rs. 4.26 million, Jordan at Rs. 3.90 million, Bangladesh at Rs. 3.50 million and Kuwait at Rs. 3.42 million. Iraq, Abu Dhabi, Kenya, Indonesia, Iran, Sudan and Sri Lanka were among other buyers. Non-galvanised tubes and pipes of iron and steel secured Rs. 14.27 million. U.S.A., Sudan, Jordan and Kuwait were the prominent markets.

In the category of tubes, pipes and fittings of iron and steel, galvanised variety secured Rs. 12.35 million while those made of cast iron netted Rs. 8 million and non-galvanised (except cast iron) earned Rs. 1.88

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million. Czechoslovakia with an intake valued at Rs. 6.25 million topped the list of buyers of galvanised tubes, pipes and fittings while U.S.A. (Rs. 1.95 million) followed by Singapore (Rs. 1.37 million) were the leading importers of tubes, pipes and fittings of cast iron.

Tubes and pipes of cast iron brought in Rs. 17.42 million. Of this, soil pipes alone secured Rs. 14.75 million, while export earning of rainwater pipes and others amounted to Rs. 2.68 million. Singapore (Rs. 5.96 million), Hong Kong (Rs. 3.17 million), U.S.A. (Rs. 1.56 million) and Malaysia (Rs. 1.53 million) were the significant markets for soil pipes.

PROMOTION OF IRON ORE EXPORTS

India's export trade in iron ore and concentrates improved to fetch Rs. 1098 million in 1972-73 as compared to Rs. 1047 million in 1971-72. In terms of quantity, the exports were up at 20.6 million tonnes against 19.90 million tonnes. The major market, Japan, absorbed 17.60 million tonnes at a value of Rs. 917.20 million as compared to 16.95 million tonnes worth Rs. 863.30 million. The other important parties were Rumania, Czechoslovakia and Poland whose purchases during 1972-73 amounted to Rs. 69.54 million, Rs. 45.95 million and Rs. 28.65 million respectively.

The National Mineral Development Corporation Limited (NMDC) contributed Rs. 288 million in the total export effort of iron ore during 1972-73. The iron ore exports from Kiriburu and Bailadila mines under the control of NMDC, aggregated nearly 4.10 million tonnes during 1972-73. The shipments of Bailadila ore to Japan alone amounted to 3.82 million tonnes in this year against 3.65 million tonnes in 1971-72. The Kiriburu and Bailadila (Deposit No. 14) mines produced 0.53 million tonnes and 3.74 million tonnes respectively during 1972-73 against 1.05 million tonnes and 3.76 million tonnes in the previous year. The shortfall in the production of Kiriburu was due to the expansion activity of the mine so that it would be modified to supply the ore to Bokaro steel plant. Kiriburu supplied 245,000 tonnes to Bokaro, 59,000 tonnes to Rourkela steel plant and exported 254,000 tonnes partly against the basic grade contract negotiated by the Minerals and Metals Trading Corporation and partly against the contract with Japanese Steel Mills.

NMDC received a Certificate of Merit from the Government of India for outstanding performance in the field of exports during 1969-70.

In addition to the iron ore business, NMDC manages two diamond mines at Ramkheria and Majhgawan and these mines produced 19,540 carats of diamonds in 1972-73. The Majhgawan mine alone produced 16,230 carats, the highest achieved so far.

The Corporation is currently engaged in the investigations of Meghahatuburu, Bailadila (Deposit 4), Ramandurg/Kumaraswamy and Malangtoli deposits. The company proposes to meet the iron-ore requirements of the second phase of the Bokaro steel plant from Meghahatuburu. The Bailadila deposit 4 is proposed to be developed for feeding the steel plants to be set up at Visakhapatnam and the Kumaraswamy deposit for feeding the Vijayanagar Steel Plant. It is further proposed by the Corporation to develop a large mechanised mine ore capacity of 8 to 10 million tonnes per year, following the success of investigations at Malangtoli, either for export or for feeding Bokaro. The projects under construction and those under proposal are expected to improve the Corporation's capacity of saleable products to about 35 million tonnes of which more than half will be for supply to Indian steel works and the rest for export.

INDIAN PLASTIC TOYS TO U.S.A.

India supplies a variety of toys abroad every year. During 1972-73, the export range included rubber toys, plastic toys, wooden toys, metal toys, mechanical toys and toy parts. During 1972-73, Hong Kong was the leading buyer of plastic toys. Among other importing countries, Nigeria, Yemen Arab Republic, South Yemen People's Republic and Saudi Arabia were prominent. For rubber toys, Nigeria, Morocco, Yemen

Arab Republic and Sudan were leading markets. Mechanical toys wooden toys and metal toys were mainly bought by U.K., U.S.A. and Federal Republic of Germany. Dolls (excluding artware) were also exported during the year to Zambia, Senegal and U.S.A.

M/s. Dynamic Plastic Private Limited, Bombay, an established company in the business of toys and games, has recently exported 40,000 pieces of toy sets to U.S.A. In terms of value, the earning totalled Rs. 113,000.

The orders secured by the firm including the one referred to above faced stiff competition from even advanced countries, such as, Japan, Federal Republic of Germany, France, United Kingdom and Italy. Till recently, the firm was exporting sports goods to West Asia and Europe alike. The firm's range of export included plastic educational toys and games material.

India's exports of toys, perambulators, games and sporting goods amounted to Rs. 28.53 million during 1972-73, registering a sharp increase over the export earning in the preceding year at about Rs. 19 million and Rs. 11.85 million in 1970-71.

EXPORT PERFORMANCE AND POTENTIAL

SPURT IN FOREIGN DEMAND FOR INDIAN FOOTWEAR

The year 1972-73 has witnessed sizeable expansion in overseas demand for footwear made in India. The export value in the year was of the order of Rs. 128.6 million as compared to Rs. 117.6 million in 1971-72. Quantumwise, nearly 14.34 million pairs were supplied abroad in 1972-73 as compared to 15.60 million pairs in the preceding year.

All leather footwear-closed and open toe-contributed Rs. 84 million. The Soviet Union purchased as much as Rs. 42 million worth of close toe all leather footwear. The other important markets were U.S.A. (Rs. 2.8 million), Nepal (Rs. 2.7 million) and U.K. (Rs. 1.34 million). U.S.A. proved to be the best recipient of the open toe of leather variety at a value of Rs. 21 million. Australia, Canada, Nepal and U.K. were the other leading customers for this variety.

Rubber soled upper canvas footwear was the next best type on the export stream. Its overseas sales value was nearly Rs. 28 million worth in 1972-73. The U.K. market absorbed worth Rs. 7 million while the Soviet Union's import value was nearly Rs. 4.6 million. In this year, Zambia has also proved to be a substantial importer (Rs. 3.6 million). Apart from these, Denmark, Canada, Bulgaria and Netherlands figured prominently in the long list of customers.

Rubber soled upper leather footwear has had a Rs. 13 million export market in the year with U.S.A., Zambia, Australia and Canada as the primary recipients. The U.S.A. market purchased worth Rs. 4.3 million while the Zambian, British and Canadian purchases amounted to Rs. 2 million, Rs. 1.7 million and Rs. 1.18 million respectively. Apart from the above varieties, the footwear industry in India has a growing export market in respect of rubber footwear, leather soled and embroidered footwear uppers. The rubber footwear has particularly proved popular in Soviet Union which was responsible for an offtake worth Rs. 1.85 million, out of the total export earning in the line of about Rs. 2.5 million.

While such being the growth rate in export of footwear, India's total exports of leather and leather manufactures have nearly doubled in 1972-73 to fetch Rs. 1745 million as compared to Rs. 908 million in 1971-72. The offtake of leather improved to the level of Rs. 1704 million against Rs. 901 million in the comparable year. There was an uptrend in respect of leather manufactures also which earned Rs. 12.30 million against Rs. 6 million.

RECOVERY IN IRON AND STEEL EXPORTS

Having registered a sizeable decline in its export supplies during 1971-72 at Rs. 408.7 million as compared to Rs. 906 million in 1970-71, India's iron and steel industry has registered a recovery in its export performance to reach the level of Rs. 417.6 million in 1972-73.

Four specific categories of iron and steel exports have particularly revealed signs of dynamism. These relate to pig iron, steel tubes and pipes and universals, plates and sheets as well as steel ingots and other primary forms.

Exports of pig iron, sponge iron and iron and steel powders rose to the level of Rs. 203 million in 1972-73 as compared to Rs. 97.4 million in 1971-72. The Soviet Union, followed by Japan was the best customer for pig iron including cast. Out of a total export value of this product in 1972-73 at Rs. 135.9 million, the Soviet Union purchased worth Rs. 60 million and Japan Rs. 56 million. Ferro manganese is another area of substantial export value. It earned Rs. 65.50 million in the year of which U.S.A. imported worth Rs. 37 million and Sweden Rs. 18.3 million.

Steel tubes, pipes and fittings has been a consistent area of export expansion even in the earlier years notwithstanding the general decline in the iron and steel product export trade. It would be interesting to note that the export value of steel pipes and tubes was of the order of Rs. 106.6 million in 1970-71, nearly Rs. 108 million in 1971-72 and Rs. 111.8 million in 1972-73. Cast iron pipes and tubes were exported to the tune of Rs. 17.4 million in 1972-73. Of this, soil pipes alone fetched Rs. 14.7 million mainly from Singapore, Hong Kong, U.S.A. and Malaysia.

Galvanised tubes and pipes (other than cast iron) fetched Rs. 57 million in 1972-73, the major markets being U.S.A. (Rs. 12 million), Saudi Arabia (Rs. 8.5 million), Australia (Rs. 4.3 million), Jordan (Rs. 3.9 million), Kuwait (Rs. 3.4 million) and Bangladesh (Rs. 3.5 million). Non-galvanised tubes and pipes (other than cast) have also proved important on export front and secured Rs. 14.3 million in 1972-73. The major customers were U.S.A., U.K., Jordan and Sudan.

Steel ingots and other primary forms have also fared well on export front in 1972-73, having netted Rs. 11.84 million in foreign exchange as compared to hardly Rs. 290,000 in the previous year. The major buyers in this line were Nepal and Bangladesh. Universals, plates and sheets of iron and steel constitute another area of export growth. Their export value improved to Rs. 4.5 million in 1972-73 as compared to Rs. 2 million in 1971-72.

There were, however, some categories of iron and steel whose export performance did not prove encouraging in 1972-73 as compared to the preceding year. The export value of bars, rods, angles, shapes and sections was down at Rs. 72 million as compared to Rs. 108 million. There was also a steep fall in the offtake of rails and railway track construction material of iron and steel and its exports got reduced to the level of Rs. 12 million as compared to Rs. 88 million.

TRADE POSITION WITH LIBYA

India's export trade with Libya amounted to Rs. 35.50 million during 1972-73 as compared to only Rs. 18.35 million in 1971-72.

According to the information received from the Indian Embassy, Tripoli, two technical experts from M/s. Tata Exports, Bombay have recently visited that country to finalise arrangements for the export of buses and other vehicles together with their spare parts. Earlier, the Libyan Council of Ministers had approved the Tata vehicles for import in Libya.

Two engineers from the General National Organisation for Industrialisation of Libya recently visited India for the purchase of cotton yarn of various counts for use in the Textile Mills project coming up in Tripoli. This project is under execution by India's Star Trading Company. An important agricultural delegation from Libya visited India during September this year and made extensive studies of the modern techniques being followed in India in cereal production. The delegation is reported to have returned to its country with a lasting impression on India's modern agricultural techniques. The Indian Mission in Libya expects that as a result of this delegation it would be possible to open collaboration with that country on yet another front, namely, agricultural development.

The State Trading Corporation has recently secured an order for the supply of 50,000 woollen blankets to the Libyan Government, the value of the deal being Rs. 2.8 million.

The Indian Mission has also reported interest shown by Libyan importers for India-made steel bars, rubber, textiles, leather goods, brass and EPNS wares, builders hardware, specially glazed tiles.

EXPORT TARGET OF INDIAN TELEPHONES

Indian Telephone Industries Limited, Bangalore anticipates an export target of Rs. 5.20 million for the year 1973-74. As against total export valve of Rs. 4.10 million during 1972-73, the actual export position in the first half of 1973-74 (April - September 1973) reached the level of Rs. 0.92 million. On hand, the firm has export orders worth Rs. 16.5 million as in September 1973 for execution during 1973-74 and 1974-75.

Among the recent export orders executed by the firm (July-September 1973) was the supply of auto-desk telephones and 50.7 line PAX to Australia, worth Rs. 140,900; PABX equipment, 10.2 lines PAX 50.7 line PAX as well as strip connections and final selectors to Kenya at a value of Rs. 127,800; group selectros and cabinet type PABX equipment (5.1.1) to Zambia at a value of Rs. 120,120; and Oscillators, auto desk switch telephones and telephone spares to Nepal at a value of Rs. 103,420. In the period July-September 1973, the total export orders executed amounted to Rs. 0.59 million.

INDO-RUMANIAN TRADE AGREEMENT

An Indo-Rumanian trade agreement for 1974 has been signed recently. According to the protocol, India will export iron ore, ferro manganese, leather and processed hides, machine tools and manufactured goods, coffee and pepper. Rumania will export fertilizers, steel and alloy steel, oil prospecting equipment, lubricating oil, machine tools, drugs and pharmaceutical products.

Rumania is one of the leading trade partners of India in the East Europe region. During 1972-73, India's exports to Rumania totalled Rs. 159.30 million as against Rs. 111.40 million in the preceding year while its imports from that country amounted to Rs. 134.45 million as compared to Rs. 132.95 million in the comparable years.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

PROGRESS IN ELECTRONICS AND TELECOMMUNICATION INDUSTRIES

The electronics and telecommunication industries occupy a key position in the Indian economy. The peculiar features of these industries are the high rate of obsolescence and rapid technological progress. These features indeed pose a challenge to their development in the country but it has been amply proved that the Indian economy is keeping pace with the modern trends.

Indeed, there are numerous items to be still developed and manufactured in the electronics industry in India but the industry is seeking to cope up with the demand and technology and every year new items are added and new schemes are implemented. During 1972-73, for instance, 25 new ranges and items were added to the existing lines of electronic manufacture in the country.

There has been a general improvement in the production of electronic equipment for entertainment, such as, radio receivers, T.V. receivers, public address equipment, record players, mono and stereo amplifiers; manufacture of Hi-Fi amplifiers has also been established. The manufacture of TV receivers has gained momentum. The actual production of radio receivers was of the order of 19.3 million numbers in 1972. The output of T.V. receivers has almost doubled from 7,800 numbers in 1971 to 14,800 numbers in the year that followed. There was also an encouraging improvement in the production of record players from 73,800 numbers to 92,300 numbers in these years.

As for the professional electronic equipment like electronic testing instruments, electronic calculators and computers, the production profile revealed improvement in 1972. A number of new instruments were taken up for manufacture for the first time and the ranges of those instruments produced earlier have also been extended. The manufacture of electronic desk calculators and computers has also registered progress, resulting in substantial saving of foreign exchange outgo as otherwise these items would have been imported. The production of electronic instruments increased from Rs. 27.70 million in 1971 to Rs. 57 million in 1972. The output of computers was valued at Rs. 15.5 million in 1972. As many as 406 electronic desk calculators were manufactured in 1972 at a value of about Rs. 4 million.

Production of equipment like wireless communication equipment, microwave equipment, railway signalling equipment, radar and other specialised equipment, telephones and telegraph equipment has registered substantial increase during 1972. Most of these items are manufactured in India's public sector undertakings. A new unit of M/s. Bharat Electronics Limited (BEL) is coming up at Ghaziabad near Delhi for the manufacture of specialised microwave equipment for Defence. The manufacture of telephone and telegraph equipment as also teleprinters has improved too. The output of teleprinters rose from 5,400 numbers in 1971 to 5,600 numbers in 1972. In these years, the production of telephone and telegraph equipment also showed an increase from Rs. 277.50 million to Rs. 317.50 million.

In the electronic component sector, semi-conductor technology has brought about revolutionary changes. This technology indeed has an important role to play in miniaturisation of electronic circuitry. The production of hybrid circuits has already started in the country.

Indian industry has already established itself in the manufacture of receiving valves, TV picture tubes, transmission tubes, C.R. tubes and microwave tubes. Receiving valves, which were so far catering to the radio receiver industry, have now started being used in the T.V. industry. The production of T.V. picture tubes has nearly doubled in 1972 compared to the preceding year. A new item added in the field of vacuum tubes is the indigenous development of nixie tubes by M/s Bharat Electronics Limited, Bangalore.

A wide range of resistors and capacitors is also being manufactured in the Indian economy. Quite a number of new types have been added recently to the list of manufactures and they include items like non-inductive wire wound resistors, professional type polystyrene capacitors, aluminium metallised film capacitors, miniature tubular ceramic capacitors, mini pin-up ceramic capacitors and metal film resistors. The production of mica capacitors, plastic film capacitors and electrolytic capacitors is established.

In respect of ferrites and magnets, so far only cast alloy permanent magnets have been manufactured. During 1972-73 production of hard ferrites has picked up which is to replace the cast alloy permanent magnets. In the cast alloy variety, the import content is as high as 50 per cent, whereas it would be negligible in the case of hard ferrites. Substantial increase in the production of soft ferrites has also been registered.

In the miscellaneous electronics components group, connectors have been made for the first time in the country with the commissioning of a unit in the field and about 200,000 connectors valued at Rs. 1.5 million were produced during 1972. The output of relays stood at 100,000 numbers at a value of Rs. 3.8 million in the same year. As for magnetic tapes, they have so far been produced in India only to cater to audio purposes in the entertainment field, namely, tape recorders. Only the spool type magnetic tapes have been so far manufactured whereas the trend today is towards the cassettes. The manufacturing units are, therefore, taking up necessary steps to produce the new variety of tapes. Other new fields where steps are being taken, are stereo pick up cartridges, magnetic heads, tape decks and T.V. deflection components.

FACTS ON AUTOMOBILE INDUSTRY

With one unit exclusively engaged in the production of vehicular diesel engines, there are 8 major manufacturers of automobile in India engaged in the production of vehicles like trucks, buses, jeeps and cars. There are also eight firms engaged in the manufacture of two-wheelers, out of which 4 produce scooters and three produce mopeds and scooterettes and three produce motor cycles. Two of the scooter manufacturers also produce three-wheeler auto rickshaws. In 1972, one more unit has gone into production of 50 cc mopeds. In respect of scooters too, a fresh unit in the state sector has recently gone into production.

The pay-load range of commercial vehicle production in the country varies from 3-4 tonnes to 16 tonnes but the principal production is in the range of 7.5 tonnes. The passenger cars are produced in three engine capacities, namely, 1000, 1100 and 1500 cc. In the last few years, the Government of India have been following a policy of liberalisation in respect of installed additional capacity, both by way of creating fresh capacity and expanding the existing one. Several letters of intent have been issued in the field of commercial vehicles, cars, three-wheelers, motor-cycles and scooters. Also the existing manufacturers of scooters, three-wheelers, motor cycles and scooters have been permitted to expand their capacities. A public sector unit has been formed to undertake the manufacture of 100,000 scooters and 25,000 three-wheelers per year.

Actual production of vehicles revealed upward trend in almost every sector during 1972 excepting in the commercial vehicles and vehicular diesel engines which was affected by the closure of the factories and power cuts. In 1972, the production of commercial vehicles was of the order of 37,470 numbers while that of passenger cars was over 40,000 numbers, jeeps 12,600 numbers, motor cycles 47,560 numbers, scooters over 64,000 numbers and three-wheelers nearly 9,800 numbers and vehicular diesel enginesa bout 1,880 numbers. Compared to the quantum of production in 1971, the motor cycles, three-wheelers and mopeds have registered improvement in 1972.

The automobile ancillary industry in the country has witnessed substantial progress in recent years, both in terms of the quantum produced and the quality of the product. In 1972-73, the production was higher by 18 per cent compared to the preceding year and the industry recorded an output of over 1300 million as against Rs. 1130 million in 1971-72. The output improvement was in respect of most of the ancillaries including nozzles, elements, delivery valves, filter elements, dynamos, gaskets, spark plugs, wiper arms and blades, switches, ignition coils, voltage regulators, distributors, gears, commutators and condensers. Likewise, the production of engine valves, carburettors, water thermostats, clutch plates, clutch cover assembly and hydraulic pumps also improved.

The Fifth Five-Year Plan scheduled to begin from 1974-75 envisages considerable expansion in the production of almost all the items in the vehicles sector, such as, trucks and cars, two-wheelers as well as automobile ancillaries. Most of the ancillaries require a limited import content ranging between 5 to 10 per cent in respect of new products envisaged. The import content is not likely to be more than 15 per cent.

One of the important raw materials used by the automobile industry is alloy steel in which indigenous content is sought to be maximised. Yet another item where indigenisation has succeeded to a considerable extent relates to gasketing materials used for the production of gaskets.

The automobile industry constitutes the prime category of export expansion in the country's engineering industry.

The export value during 1972-73 was of the order of nearly Rs. 160 million as compared to Rs. 149 million in 1971-72. Of this, jeeps and land rover type of vehicles earned Rs. 6.7 million mainly from Bangladesh and Sri Lanka. Buses earned Rs. 23 million, the major importer being Bangladesh. Assembled lorries and trucks contributed Rs. 36 million, Bangladesh again being the major recipient. Bus chassis, motor vehicle replacement parts, motor cycles and motorised vehicles including auto rickshaws were among the other road motor vehicle equipment exported. The motor vehicle initial equipment replacement parts were popular in markets like Arab Republic of Egypt, Yugoslavia, Nepal, Nigeria, Singapore and Sudan.

A good beginning has been made by the automobile industry in the export of technology too. One of the units engaged in the production of shock absorbers has acquired Indian Government's permission to establish a joint venture unit in Malaysia. Another firm has already established a unit in Singapore for the manufacture of radiators. A number of other firms have also received enquiries from developing countries for starting joint ventures.

HINDUSTAN SHIPYARD BUILDS ANOTHER CARGO LINER

Being the third of a new series of ships constructed with machinery three–quarter aft, a 13,900 DWT cargo liner 'VISHVA MATA' has been built for the Shipping Corporation of India Limited by Hindustan Shipyard Limited, Visakhapatnam. The new series of ships have been designed by the Shipyard itself. A 60-ton derrick on the foremast has been fitted for lifting heavy cargo and a bulbous bow has been fitted to increase the speed of the ship. This ship has been built conforming to the highest classification of the Lloyd's Register of Shipping.

The Hindustan Shipyard has, so far, constructed and delivered 61 ships of different sizes including small crafts aggregating about 510,000 DWT.

The vessel now constructed is equipped with the latest navigation aids, such as, high powered wireless equipment, direction finder, Decca/Loran navigators, True – motion/Anti – collision radars, Echo – sounder system, Electric Automatic Pilot, Radio telephone Course Recorder and distant reading thermometer.

REFRACTORIES OUTPUT TO BE DOUBLED

India's production of refractories is to be almost doubled over the next five years. In 1972-73, the output of refractories, both metallurgical and general grade was 584,000 tonnes. The production is expected to go up to 927,000 tonnes in 1978 against a demand of 920,000 tonnes.

The present production falls short of demand and refractories worth Rs. 65 million were imported in 1971-72.

Further expansion of production capacity for refractories would be allowed by the Government but additional capacity will have to be in the vicinity of steel plants.

Refractories constitute an essential feeder industry for steel, aluminium and other metal industries and nearness of the factories to the steel plants is desirable.

EFFORTS TO CONTROL INFLATIONARY TRENDS

The first endeavour of the Fifth Five–Year Plan would be to control the inflationary trend in the economy, stated India's Planning Minister, Mr. D. P. Dhar recently while addressing the Consultative Committee of Members of Parliament attached to the Planning Ministry. Some of the measures to reduce the deficit financing and to mop up excess liquidity have already been taken. However, the crux of the problem is production. Unless production, specially of mass consumption goods, is increased, it would not be possible to ensure price stability. He said that the procedures governing investment were being modified to facilitate quicker clearance of project. The country has a mixed economy and, therefore, it is essential to induce, and even to coerce, private investment in areas of social importance. At the same time, the importance of the core sector for the development of the economy needs no over-emphasis.

On the question of resource mobilisation, he stressed the fact that the resource base would have to be expanded and sectors which had not so far contributed appreciably to the resource mobilisation would have to be tapped.

Referring to agriculture and employment, he said that special programmes were being devised which would generate an income of Rs. 600/- per year per family at 1972-73 prices for the lowest three deciles of the population. Programmes for small and marginal farmers, drought prone area programmes, command area projects, animal husbandry programme and village and small industries were to be expanded to cater to a population of approximately 20 million people in the rural areas. He said that the financial allocations for small scale and village sector industries might be increased depending on the availability of resources as the Plan progresses.

Some of the other aspects referred to by the Minister included the striking of a balance between organic and chemical fertilisers, encouragement to the development of small-scale and village industries and wool production, extension of rural electrification, checking the population growth, and stopping private channel of distribution of fertilisers.

TELEPRINTERS PRODUCTION GOES UP

M/s. Hindustan Teleprinters Limited, GST Road, Guindy, Madras, has a record of contribution to the teleprinter industry in India.

In 1972-73, the firm's production was over 6040 teleprinters in addition to ancillary equipment; it was up by 26 per cent over the production during the preceding year at 4780 units. Aside from its main item of manufacture–teleprinters–the firm's supply of spares too improved by about 15 per cent at a value of Rs. 6.7 million as compared to Rs. 5.80 million. For 1973-74, the firm has set a target of Rs. 8 million for spares.

Incorporated in 1960, the firm has a production capacity (as by March, 1973) of 8500 teleprinter units in double shifts. It has an active plans to introduce new models of electro-mechanical and electronic teleprinters based on its own designs and a variety of ancillary equipment, new machines for data handling and peripheral equipment required for computers. It has also plans to diversify its product range to include electronic private branch exchanges and data moderns during the Fifth Five–Year Plan period, beginning from 1974-75.

India exports a wide range of telecommunication apparatus every year. During 1972-73, the exports in the line were of the order of Rs. 28.80 million. The export range included television receivers and parts, radio receivers, transistor radio receivers, telegraph apparatus and instruments, telephone apparatus and instruments and parts, microphones and parts, loudspeakers, amplifiers, radio broadcasting apparatus and television cameras, wireless reception with transmitting apparatus, radio telegraphs, transmission reception apparatus parts, radio broadcasting and television transmission apparatus and parts and wireless reception apparatus and parts.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

YEAST FROM MOLASSES

The Central Food Technological Research Institute (CFTRI), Mysore, has developed a process for manufacture of baker's yeast, an important ingredient for bread making.

The process developed by CFTRI consists of fermentation of clear, sterilised molasses using a carefully developed yeast culture. Urea and superphosphate are used as nutrients. Aeration is employed and fermentation takes nearly 13 hours for completion. The wort is centrifuged to harvest the yeast. Cream is washed to remove residual sugar and colour. It is then filtered and packed in wax paper. The finished product is stored at 5°C.

At present, two firms, namely, Indian Yeast Co., Bombay and Calcutta and Mohan Meakins Ltd., Delhi are manufacturing baker's yeast in the country. Their total production is not enough to meet the total yeast requirements of the country. The process developed by CFTRI has already been successfully commercialised by M/s. Mohan Meakins Ltd. The process can be demonstrated at CFTRI on a pilot plant having a capacity of 20 kg yeast per batch.

Finished product from the pilot plant has been tested to conform to IS specification for baker's yeast (IS: 1320-1958). A large scale modern bakery has found the product quite acceptable after trials.

Raw materials required for the manufacture of baker's yeast are molasses, urea, superphosphate, sulphuric acid and antifoam oil. All are available indigenously.

The principal items of plant and machinery required are stainless steel fermenters, M. S. storage and sterilization tanks for molasses, self opening bowl clarifier (S. S), jacketed seed cream storage tank with agitator, centrifugal pumps, nozzle type centrifuge (S.S), plate heat exchanger for cooling, filter press, extruder, blower with accessories, chilled water unit, boiler, cold storage room and packing unit. Part of the plant and machinery will, however, have to be imported.

LIME HYDRATOR DEVELOPED

The Central Building Research Institute (CBRI), Roorkee, has designed, fabricated and commissioned a 3-tier lime hydrator which can hydrate nearly 7 tons of lime per day.

The first tier acts as the pre-mixer. Hydration mainly takes place in the middle tier. In the third, hydration is completed and the materials are dried. The steam generated during the process of hydration is utilised for pre-heating the incoming water.

EXPORT TRADE IN MACHINERY AND TRANSPORT EQUIPMENT

(In Million Rupees)

Items	1970-71	1971-72	1972-73
Non-Electrical Machinery	**280.78**	**241.60**	**293.60**
Power Generating Machinery (Non-electric)	54.30	55.20	90.75
Textile and Leather Machinery	76.80	55.05	48.70
Machines for Special Industries	15.75	17.30	18.60
Metal Working Machinery	25.10	22.65	17.25
Office Machines	19.55	21.45	22.10
Agricultural Machinery and Implements	5.10	3.65	6.00
Other Machinery (Non-electric) and Machine Parts (n.e.s.)	84.15	66.25	90.15
Electrical Machinery, Apparatus and Appliances	**160.80**	**186.75**	**243.30**
Equipment for Distributing Electricity	35.65	54.00	66.55
Electrical Power Machinery and Switchgear	44.65	47.50	56.15
Telecommunication Apparatus	27.60	29.90	28.80
Domestic Electric Equipment	15.60	15.45	30.85
Electrical Apparatus for Medical Purposes and Radiological Apparatus	0.50	0.85	0.50
Other Electrical Machinery and Apparatus	37.35	39.00	51.50
Transport Equipment	**309.50**	**309.40**	**315.25**
Road Motor Vehicles	209.00	149.35	160.00
Road Vehicles other than Motor Vehicles	71.00	73.25	104.70
Railway Vehicles	28.15	69.40	39.60
Aircrafts	0.80	16.60	1.85
Ships and Boats	0.55	0.75	9.20
Total	**751.10**	**737.75**	**843.15**

Source : Director General of Commercial Intelligence and Statistics, Calcutta.

INDIA'S IMPORT BILL DECLINES

India's import bill during 1972-73 was successfully reduced to the level of Rs. 17967.36 million from Rs. 18245.42 million in 1971-72. In these two years, the country's export value was Rs. 19544.50 million and Rs. 16031.53 million respectively. In other words, the adverse balance of trade to the tune of Rs. 2213.89 million in 1971-72 was converted into a trade surplus of Rs. 1577.23 million in 1972-73.

The curtailment in the import bill to the extent of nearly Rs. 280 million was a result of reduced purchases of several products, that were traditionally prominent in the country's import trade. Cereals, raw cotton, animal and vegetable oils, pharmaceuticals, paper, iron and steel and transport equipment are some of the examples. At the same time, crucial imports, such as, petroleum products, chemicals elements and compounds, manufactured fertilizers, non-ferrous metals, metal manufactures, machinery and electrical apparatus continue to occupy importance. While the need for maintaining, if necessary, stepping up the import trade in critical areas that are essential for industrial development is obvious, the reduction secured in the overall import bill in 1972-73 is indeed a reflection of the tightening of the country's import trade policies and the progress achieved in the context of import substitution and industrial diversification.

Categorywise, the position of import trade during 1972-73 as compared to 1971-72 would reveal interesting trends. The food and live animals category witnessed a substantial reduction in imports from Rs. 1969 million in 1971-72 to Rs. 1597 million in 1972-73. The major areas where imports were reduced related to wheat (from Rs. 1026 million to Rs. 482 million), rice (Rs. 181 million to Rs. 107 million) and milk and cream (Rs. 190 million to Rs. 180 million). The imports of cereal preparations, fresh fruits and nuts as also dried fruits, however, registered increases. Overseas purchases of raw cashewnut have gone up from Rs. 316 milllon to Rs. 318 million in 1972-73. Dry fruit imports (mainly dates) increased to Rs. 121 million from about Rs. 58 million.

Among inedible crude materials, the import value of oil seeds, oil nuts and oil kernels rose to Rs. 123 million against Rs. 105 million. The import of mustard seed (mainly from Canada) amounted to Rs. 82 milli against Rs. 39 million while that of copra was abo Rs. 7 million during 1972-73 as compared to Rs. 16 million in 1971-72.

Raw cotton imports came down substantially Rs. 909 million in 1972-73 from Rs. 1134 million in th preceding year. Likewise, the import value of raw wo was also brought down from Rs. 142 million to Rs. 11 million. Raw jute imports, however, went up fro almost nil to Rs. 11.3 million in the comparable years.

Expenditure on the import trade of crude fertil zers, namely, rock phosphate and natrual sodium nitrat was marginally up at Rs. 110 million as compared t Rs. 106 million. Sulphur imports were more or les maintained at Rs. 117 million. Import of crude asbesto went up from Rs. 78 million to Rs. 102 million.

While the value of crude petroleum imports declined from Rs. 1475 million in 1971-72 to Rs. 1448 million in the year that followed, import trade in petroleum products rose substantially to Rs. 592 million against Rs. 467 million. Thus on balance the group of petroleum and petroleum products has registered increased imports to the extent of Rs. 2040 million against Rs. 1940 million. The animal and vegetable oils and fats category has recorded a slashed import bill. These imports amounted to Rs. 465 million in 1971-72 which were reduced to Rs. 248 million in the following year. The two major product groups which contributed to this saving in imports were animal oils and fats and soft fixed vegetable oil. Mutton tallow was bought more from Australia (Rs. 18.5 million in 1972-73 against Rs. 0.2 million), while the purchases of other fats (cattle, sheep and goat) were sizeably reduced from U.S.A., from Rs. 178 million to Rs. 70 million. So also was the decrease in soya bean oil imports from U.S.A. (from Rs. 278 million to Rs. 146 million).

In the category of chemicals group, the import value of chemical elements and compounds moved up to Rs. 889 million during 1972-73 as compared to Rs. 718 million in the year that preceded. The major products responsible for this increase in import bill were organic chemicals particularly Dodecyl benzenes, xylenes, chemically pure glycerine, propylene glyc undenatured ethyl alcohol, dimethyl phthalate, urea (from Rs. 77 million to Rs. 265 million, the major suppliers being Japan, Kuwait, Poland, Korea Rep Bulgaria and Belgium) and epsilon caprolactum.

The import value of inorganic chemicals has been, however, reduced considerably from Rs. 200 million to Rs. 142 million. The specific areas where imports have come down were silicon, mercury quick silver, carbon black, phosphoric acid, titanium dioxide, aluminium fluoride and certain other metallic salts.

The group of medicinal and pharmaceutical products have also registered an encouraging decline in their import value which amounted to Rs. 229 million during 1972-73 as compared to Rs. 266 million in 1971-72. For most of the vitamin products, imports came down sizeably. For instance, the import value of folic acid was of the order of Rs. 1.34 million in 1971-72 and it came down to barely Rs. 8300 in 1972-73. Vitamin B_1 imports came down from Rs 4.52 million to Rs. 1.38 million. Vitamin B_2 imports fell from Rs. 3.8 million to Rs. 1.3 million.

In the antibiotics group, the specific products for which imports fell were chloramphenicol, streptomycin and preparations and penicillin and preparations. The import value of medicaments was, however, maintained at Rs. 140 million in 1972-73 against Rs. 143 million in the previous year.

Manufactured fertilizers witnessed an increased expenditure on imports at Rs. 900 million during 1972-73 as compared to Rs. 812 million in 1971-72. The import of nitrogenous fertilizers increased from Rs. 357 million to Rs. 388 million. Import of ammonium nitrite had, however, fallen, while that of ammonium sulphate and urea (up to 45 per cent nitrogen) increased. Phosphatic fertilizer imports had gone up sizeably from Rs. 93 million to Rs. 150 million.

The import value of paper and paper board has gone down from Rs. 349 million in 1971-72 to Rs. 307 million in 1972-73. Newsprint imports came down from Rs. 276 million to Rs. 205 million.

Import trade in pearls and precious stones, obviously for re-exports increased from Rs. 263 million in 1971-72 to Rs. 416 million in 1972-73.

In the iron and steel group, imports came down from Rs. 2376 million to Rs. 2171 million and the decrease was in regard to most of the categories excepting steel tubes and pipes. For instance, the import of pig iron was reduced from Rs. 29.8 million to Rs. 8.5 million; ingots and other primary forms from Rs. 127 million to Rs. 94 million; iron and steel bars and rods from Rs. 348 million to Rs. 300 million; universals, plates and sheets from Rs. 1422 million to Rs. 1349 million; hoop and strip of iron and steel from Rs. 178 million to Rs. 117 million and iron and steel wires from Rs. 53 million to Rs. 33 million. The export value of steel tubes and pipes increased, however, from Rs. 174 million to Rs. 220 million.

There was a marginal fall in the import of non-ferrous metals from Rs. 1024 million to Rs. 1016 million. Copper imports were reduced from Rs. 512 million to Rs. 486 million. Import of aluminium came down from Rs. 98 million to Rs. 28 million. But the import of nickel, lead, zinc and tin have increased.

Machinery sector has also noticeably increased its import expenditure-from Rs. 2708.6 million in 1971-72 to Rs. 2849.8 million in 1972-73. The principal categories of machinery, whose imports were more, were power generating machinery, metal working machinery, textile and leather machinery and machines for industries. The import of agricultural implements have, however, fallen sizeably.

As in the machinery group, imports of electrical machinery and appliances also rose to Rs. 1240 million from Rs. 1051 million. The imports went up on account of the increased intake of electrical power machinery and switchgears; equipment for distribution of electricity tele-communication apparatus and electrical apparatus for medical purposes and radiological apparatus.

Mainly due to the reduced intake of road motor vehicles and aircraft, the expenditure involved in the import trade of transport equipment was brought down to Rs. 871 million from Rs. 946 million. The import value of road motor vehicles fell to the level of Rs. 306 million from Rs. 374 million while that of aircraft from Rs. 351 million to Rs. 332 million. Imports of railway vehicles and ships have, however, increased from Rs. 199 million to Rs. 202 million and from Rs. 20 million to Rs. 30 million respectively.

A brief analysis of the countrywise position of imports into India would also reveal interesting trends. The African region has supplied more to India at Rs. 1636 million in 1972-73 as against Rs. 1437 million (mainly by Sudan, Tanzania and Zambia). Both Canada

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and United States supplied less. From the United States of America, imports fell substantially to the level of Rs. 2246 million against Rs. 4187 million while from Canada, the reduction was from Rs. 1133 million to Rs. 1051 million.

From the Latin American region, India imported more. The import value was as much as Rs. 231 million as compared to Rs. 57 million in 1971-72.

Mainly Argentina and Peru were responsible for the increase. The ECAFE market also supplied more to India to the level of Rs. 3888 million as compared to Rs. 3614 million. The Japanese supplies were of the order of Rs. 1702 million as compared to Rs. 1616 million while closely following was Iran from which market, the Indian intake was reduced marginally to Rs. 1214 million as against Rs. 1264 million. Among other ECAFE countries that supplied more to India during 1972-73 than in the preceding year were Afghanistan, Australia, Republic of Korea, Malaysia, New Zealand, Bangladesh and Thailand. In the non-ECAFE region, the most important markets were Kuwait and Saudi Arabia.

In tune with the Government of India's policy to promote trade exchanges with the East European region, more imports were sought therefrom to reach the level of Rs. 2178 million in 1972-73 as compared to Rs. 2094 million in the year before. The imports from U.S.S.R. increased to Rs. 1057 million as against Rs. 873 million. Purchases from the German Democratic Republic and Poland, however, declined.

European Common Market countries have also supplied more to India during 1972-73 at Rs. 3175 million as compared to Rs. 2537 million in 1971-72. Imports from Federal Republic of Germany went up to Rs. 1607 million against Rs. 1270 million. Belgium, Italy and Netherlands also supplied more while from France, there was a marginal decline.

In the European Free Trade Area, the United Kingdom had supplied products worth Rs. 2255 million during 1972-73 as compared to Rs. 2210 million in the preceding year. Sweden, Switzerland, Norway and Austria were the other markets that supplied more while Denmark was an exception from which market the imports were less. ☐

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THREE - WHEELERS AND SCOOTERS TO BANGLADESH

India's automobile industry has been registering rapid strides in production and export trade. The automobile group of products, in fact, leads the list of the country's engineering export products.

M/s. Bajaj Auto Limited, Bombay–Poona Road, Chinchwad, Poona-19, one of the leading manufacturers and exporters of automobiles in Western India received a sizeable export order from Bangladesh for the supply of 1500 Bajaj three-wheeler chassis during 1972-73 valued at Rs. 6.2 million. Interestingly, the firm was able to execute the entire supplies within the period of only four months. Additionally, the firm also exported a few scooters of their latest model 'Bajaj Chetak' in the year.

During 1972-73, the firm manufactured 43,830 scooters and 7485 three-wheelers. Lately, the firm received a licence from the Government of India for increasing its installed capacity 100 per cent from 24,000 numbers to 48,000 numbers per annum. The firm's plans to double its installed capacity of three-wheelers are under progress. It has also developed prototypes of auto-rickshaws with seating capacities of three and four passengers.

During 1972-73, India's automobile industry secured foreign exchange to the tune of Rs. 160 million as against Rs. 149 million in 1971-72. The export range during the year included trucks and lorries, motor vehicle initial equipment, engine mounted chassis for tractors, jeeps and landrover type of vehicles, auto-rickshaws, special purpose lorries, motor vehicle replacement parts, road tractors, motor cycles, motor scooters, tractor parts, engine mounted chassis for passenger motor cars and motor cars.

Bangladesh, Nepal, Arab Republic of Egypt, Yugoslavia, Sri Lanka, Nigeria, Saudi Arabia, Kuwait, Iran, Singapore, Sudan and Tanzania Republic were the leading destinations for these vehicles and parts.

In the organised sector, during 1972, there were 7 units engaged in the manufacture of commercial vehicles. As against the installed capacity of 62,400 numbers, their total production during the year was estimated at 37,470 numbers. In 1971, the installed capacity of 62,500 numbers was spread over among 6 units and their total production was of the order of 40,865 numbers. As against the installed capacity of 10,000 numbers, the production of jeeps by a single unit was 2,590 numbers in 1972. In the same year, production of cars was of the order of 40,040 numbers against the total installed capacity of 47,400 numbers.

For scooters, there are 8 units with an installed capacity of 167,300 numbers per year and actual production record of 64,330 numbers during 1972. In the same year, the production of three-wheelers was 9,790 numbers while that of mopeds and scooterettes was of the order of 21,607 numbers. In the preceding year, the production was 6,150 numbers and 14,115 numbers respectively.

ELECTRIC SWITCHES TO UNITED KINGDOM

Among a wide range of electrical apparatus exported from India, switches have, in recent years, come to contribute significantly. During 1972-73, the foreign exchange earning secured through the overseas supplies of switches amounted to Rs. 1.75 million as against nearly Rs. 1 million in the preceding year.

During 1972-73, plastic switches and switches made from other material were exported to a large number of countries. Iraq, Morocco, U.K., Nigeria, Malaysia and Sri Lanka were the prominent markets for plastic switches while switches made from other material were mainly bought by Saudi Arabia, Iraq, U.K., Burma, Arab Republic of Egypt, Sri Lanka, Kuwait, Singapore and Australia.

In the preceding year, Iraq, Nigeria, Sudan and Singapore were the principal markets for plastic switches while Malaysia, Nigeria, Sudan, Malawi Iraq and France were the leading destinations fo switches made from other material.

M/s. R. G. Keswani Industries, 132, Dr. Annie Besant Road, Worli Naka, Bombay-18, one of the exporters of electrical goods, introduced India-manufactured switches into the U.K. market for the first time. The firm supplied 20,000 switches to United Kingdom on trial basis in 1972 and in May-June 1973. Being satisfied with the quality of switches, U.K. placed new orders for more quantity. The firm received these orders from the United Kingdom through

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their agents, M/s. Indian Engineering Company, Bombay. Apart from these, the firm recently executed orders for 100,000 switches received by it from West Asian countries.

Against the background of India's position of a net importer of switches some years back, the firm's endeavour in introducing this item in a sophisticated market like United Kingdom is indeed noteworthy.

The firm manufactures about Rs. 2.5 million switches per year for fans, motors, refrigerators, air-conditioners, portable electric tools, electrical appliances, electronic apparatus, control panels and machine tools.

India's export trade in electrical machinery, apparatus and appliances earned foreign exchange to the tune of Rs. 234.30 million in 1972-73. The exports registered more than 25 per cent increase over those in the preceding year at Rs. 186.75 million.

Of the total export value in 1972-73, equipment for distributing electricity brought in Rs. 66.57 million as against Rs. 54 million (1971-72) while electrical power machinery and switchgear accounted for Rs. 56.15 million as compared to Rs. 47.50 million, domestic electric equipment Rs. 30.82 million against Rs. 15.45 million, telecommunication apparatus Rs. 28.80 million against Rs. 29.90 million and other electrical machinery and apparatus Rs. 51.50 million as compared to Rs. 39 million.

INDIAN CHEMICALS TO WORLD MARKETS

India's exports of chemical elements and compounds during 1972-73 at Rs. 76.45 million registered improvement over the export performance during the preceding year at Rs. 71.75 million. Of the total export value, organic chemicals earned Rs. 28.30 million while inorganic chemicals, elements, oxides and halogen salts brought in Rs. 48.15 million.

M/s. Dhrangadhra Chemical Works, 'Nirmal', 241, Backbay Reclamation, Nariman Point, Bombay-1 contributed its export endeavour to the chemical industry's overall export turnover during 1972-73 to the tune of Rs. 12 million. Interestingly, the firm's exports rose to this level from Rs. 9 million in the preceding year, registering about 30 per cent increase.

The firm's range of manufactures includes caustic soda (rayon grade), soda ash, soda bicarb, liquid chlorine, hydrochloric acid, bleach liquor, calcium chloride, trichlorethylene and perchloroethylene. The firm has two manufacturing plants - one located at Dhrangadhra for producing soda ash, soda bicarb and calcium chloride and the other at Sahupuram in Tirunelveli District of the Madras State for manufacturing caustic soda (rayon grade), hydrochloric acid, liquid chlorine, bleach liquor and triperchlorethylene. The firm has applied for expansion of its installed capacity of soda ash and soda bicarb to 65,000 tonnes and 7,200 tonnes per annum recently.

India's export range of organic chemicals during 1972-73 included alcohols, anthraquinone, halogenated and sulphonated acids and derivatives, inorganic salts and derivatives, nitrogenous functional compounds, organo - inorganic hetrocyclic compounds and other organic chemicals and compounds. U.S.S.R., U.S.A., Japan, Italy, Netherlands, Bulgaria, Sri Lanka, Nepal, Federal Republic of Germany, France, Poland, Kuwait and Malaysia were the leading buyers.

In the same year, inorganic chemicals-oxygen, hydrogen and nitrogen rare gases ; chemical elements like chloride, phosphorous red, carbon black for rubber industry, inorganic acids, oxygen compounds (non metals), metallic oxides used in paints, other inorganic bases metallic oxides, metallic salts, peroxy salts and inorganic acids and inorganic chemical products were supplied abroad. Dubai, Abu Dhabi, Saudi Arabia, Thailand, Congo Republic, Indonesia, Belgium, U.S.A., Japan, Arab Republic of Egypt, Sri Lanka, Singapore, Malaysia, Nepal, Kuwait, Kenya, U.S.S.R., Bangladesh and Federal Republic of Germany were the significant markets.

MANGO JUICE FOR EXPORT

India's exports of mango juice were of the order of Rs. 20.36 million during 1972-73. As compared to the export earning at Rs. 12.52 million in 1971-72, the exports in the following year registered more than 66 per cent increase. Quantumwise, 9.70 million kgs and 5.90 million kgs were supplied abroad in the respective years.

During 1972-73, as in the preceding year, U.S.S.R. was the principal importer of mango juice which bought 7.85 million kgs valued at Rs. 15.27 million, accounting for the bulk of export supplies. In the preceding year, its imports totalled 4.48 million kgs valued at Rs. 8.15 million. Poland was the second best market which purchased 0.73 million kgs at a cost of Rs. 1.72 million. South Yemen People's Republic, U.S.A., U K., Saudi Arabia, Dubai and Bahrein Islands were the other prominent markets.

Besides mango juice, mango slice brine, mango chutney and mango pickles were the other mango products exported during the year. These were mainly bought by U.K., Iraq, Kuwait and U.S.A.

Adding to the export effort of the processed food industries, M/s. Rehabilitation Industries Corporation Limited, 25, Free School Street, Calcutta-16, received during 1972-73 an export order from U.S.S.R. worth Rs. 143,000 for the supply of mango juice to that country. The order was received by the Corporation through the State Trading Corporation (STC). Earlier it had received an export order from the same country valued at about Rs. 91,000 and it was executed in 1971-72.

Besides mango juice, the Corporation is currently negotiating a contract with the Bangladesh Authorities for the supply of textile goods through the Cotton Textiles Export Promotion Council. The Corporation also has plans for export of silk goods, readymade garments, ammunition and boots in the U. K. and Denmark.

During 1972-73, the Corporation produced goods valued at Rs. 8.45 million as against Rs. 6.78 million in the preceding year, registering 24 per cent increase. The diversified range of products of the Corporation includes a large number of items, such as, handloom goods, engineering items, canned fruits, leather goods, electrical accessories and a wide range of other consumer items.

Apart from production of a variety of items, the Corporation is also engaged in building industrial estates with built up factory sheds with water, electricity and other facilities. It has, so far, built five such estates-two at Bon-Hooghly and one each at Behala, Durgapur and Ranaghat.

India's fruits and vegetables industry brought in foreign exchange worth Rs. 811.60 million during 1972-73 as compared to Rs. 703.50 million in the preceding year. Of this, fresh fruits and nuts secured Rs. 727 million while fresh, frozen and simply preserved vegetables earned Rs. 36.60 million, preserved fruits and fruit preparations Rs. 29.45 million, vegetable roots and tubers (preserved or prepared) Rs. 15.75 million and dried fruits Rs. 2.65 million.

U.S.S.R., U S.A., Federal Republic of Garmany, U K., Canada, Japan, Australia, Singapore, Rumania, Netherlands, Hong Kong, Poland, Spain, Kuwait, Yogoslavia, Nepal, Malaysia, France and Switzerland were the leading importing destinations.

PRINTING INK EXPORTS UP

Overseas supplies of printing inks earned foreign exchange for India at a value of Rs. 1.33 million during 1972-73. In the preceding year, the exports were of the order of Rs. 0.55 million. In terms of quantity, 165 tonnes and 85 tonnes were supplied overseas in the respective years.

During 1972-73, printing inks and printer's colours were exported to a number of countries in which Nigeria, Bangladesh, Thailand, Iraq, Uganda, Lesotho, U.S.S.R., Lebanon, Kuwait and Kenya were prominent. In 1971-72, Thailand was the major market followed by Iraq, Sri Lanka, Kenya, Sudan, Singapore, Lebanon, Burma, Ethiopia, Dubai and Nepal.

Recently, M/s. Coates India, 3, Canal East Road, Calcutta-4, the major exporters of printing inks, secured an export contract amounting to 172 tonnes of printing inks. This order is significant as it not only doubles the exports of the firm but also exceeds the export target set by the Government for the entire printing ink industry. The firm during the past few years has been exporting printing inks to a number of West Asian countries.

India's exports of pigments, paints, varnishes and related materials secured foreign exchange to the tune of Rs. 45.57 million during 1972-73, which registered significant increase over the export value in the preceding year at Rs. 28 46 million. During 1972-73, colouring materials and printing inks, prepared paints, enamels, lacquors, varnishes, prepared organic dyestuff pigments and prepared inorganic pigments, ready mixed paints, textile printing colours, synthetic enamels, varnishes, artists colours and other paints were supplied abroad. Among leading destinations, U.S.S.R., Nepal, Arab Republic of Egypt, Iran, U.S A., Singapore, Netherlands, Thailand and Bangladesh were significant.

EXPORT PERFORMANCE AND POTENTIAL

DESTINATION PATTERN OF INDIA'S ENGINEERING PRODUCTS

Alongside the diversification in the composition pattern of engineering product exports in the last few years, there have been interesting changes in the regionwise distribution of the exports.

Wayback in 1955-56, West Asia was the best market for the engineering exports. The South East Asia region has taken over the lead in the years that followed and today it is undoubtedly the best customer. In 1972-73, the South East Asia region absorbed as much as Rs. 488 million worth of India's engineering products, out of the country's total engineering export trade at a value of Rs. 1505 million. In the same year, West Asia's share was of the order of Rs. 313.75 million while Africa imported worth Rs. 264.5 million, East Europe Rs. 198 million, West Europe Rs. 113.3 million, North and Central Americas Rs. 88.47 million, South America Rs. 3.4 million, West Indies Rs. 2.67 million, Oceanic Islands Rs. 8.53 million and Australasia Rs. 23.97 million.

The overall export trade of India's engineering products rose from Rs. 53.75 million in 1955-56 to Rs. 105.5 million in 1960-61, Rs. 297.67 million in 1965-66, Rs. 1165.86 million in 1970-71, Rs. 1260.43 million in 1971-72 and Rs. 1505 million in 1972-73.

During 1972-73, the best individual market in South East Asia for the engineering products from India was Bangladesh at Rs. 202 million, followed by Malaysia and Singapore (Rs. 97.58 million), Nepal (Rs. 44.3 million), Sri Lanka (Rs. 41 million), Thailand (Rs. 32.66 million), Indonesia (Rs. 29 9 million) and Hong Kong (Rs. 18.45 million). The Japanese import of Indian engineering products was only of the order of Rs. 4.55 million in 1972-73 as compared to Rs. 2 million in 1971-72, Rs. 1.14 million in 1970-71.

In the West Asian market, Iran was indeed the best importer, having absorbed the engineering products worth nearly Rs. 101 million during 1972-73 out of a total of Rs. 313.7 million worth of exports to the entire West Asian region. Next to Iran were Kuwait at Rs. 49.54 million, Iraq Rs. 44.5 million, Muscat, Oman and Qatar Rs. 33.34 million, Saudi Arabia Rs. 32.4 million, South Yemen including Abu Dhabi Rs. 14.83 million, Jordan Rs. 13.6 million and Afghanistan Rs. 10 million. In the same year (1972 73), the African continent imported the engineering products at a value of Rs. 264.50 million. The Arab Republic of Egypt has been a steady market for these products, importing worth Rs. 62.26 million. But its imports were the highest at Rs. 161.6 million during 1970-71, which fell to Rs. 99 8 million in the subsequent year. Sudan proved to be the next best market in the African continent at an import value of Rs. 51 million in 1972-73. The Nigerian intake was of the order of Rs. 50 million. Kenya, Libya, Uganda, Zambia and Tanzania were the next important customers at an import value of Rs. 30 million, Rs. 21.5 million, Rs. 10.2 million, Rs. 10.2 million and Rs. 9 8 million respectively.

While the Asian and African continents imported worth Rs. 802 million and Rs. 264.5 million respectively, the European purchases were of the order of Rs. 311.4 million during 1972-73. Of the European purchases, the share of East Europe was of the order of Rs. 198 million, European Common Market (excluding U.K) Rs. 54.2 million, European Free Trade Area countries Rs. 55 million and other European countries Rs. 3.9 million. The entire continent of Europe imported these engineering products to the tune of Rs. 0.47 million during 1956-57, which rose to Rs. 6.2 million in 1960-61, Rs 51.6 million in 1965-66, Rs. 224.74 million in 1970-71 and Rs 246.47 million in 1971-72.

The East European intake was nil in 1956-57. It was only of the order of Rs. 0.12 million in 1960-61 and improved to Rs. 22.3 million in 1965-66, Rs. 123 million in 1970-71, Rs. 131 million in 1971-72 and Rs. 198 million in 1972-73. This consistent improvement is visible in respect of all the East European markets. The share of the Soviet Union during 1972-73 was as much as Rs. 73.3 million.

ENGINEERING PRODUCT EXPORTS (1972-73)
TEN LEADING DESTINATIONS

	(Rs. in million)
Bangladesh	202.00
Iran	101.00
U.S.A.	83.00
U.S.S.R.	73.40
Arab Republic of Egypt	62.30
Sudan	51.00
Nigeria	50.20
Kuwait	49.60
Poland	46.00
U.K.	45.70

ENGINEERING PRODUCT EXPORTS (1972-73
TEN LEADING CATEGORIES

	(Rs. in million)
Automobile and Auto Parts	168.00
Electric Wires and Cables	126.00
Fabricated Steel Structurals	112.50
Bicycles and Parts	106.00
M. S, Pipes, Tubes and Fittings	92.00
Hand Tools and Small Tools	76.00
Diesel Engines and Parts	64.50
Electric Motors, Switchgears and Transformers	63.00
Transmission line Towers and Poles	49.00
Iron and Steel Castings	48.50

Of the E.E.C. countries, the Federal Republic of Germany has been the best area for India's export expansion. This country's intake was of the order of Rs. 33.43 million during 1972-73. Next in importance in the ECM group were Netherlands and France.

While the entire EFTA group purchased the engineering products from India at a value of Rs. 55 million during 1972-73, the U.K. absorbed worth Rs. 45.7 million.

U.K.'s purchases were worth nearly Rs. 0 25 million in 1956-57 while in 1960-61 its imports were Rs. 0.93 million, Rs. 15.8 million in 1965-66 and Rs. 43 million in 1971-72.

The U.S. purchases in 1972-73 were of the order of Rs. 83 million out of the total purchases of about Rs. 88.45 million by North and Central America.

In the South American market, Peru, Brazil and Bolivia may be mentioned in the context of improved engineering product imports from India.

In the first five months of 1973-74 (April-August 1973), the export value of engineering goods as estimated provisionally by the Engineering Export Promotion Council, Calcutta, stood at Rs. 589.50 million registering a 17 per cent growth over Rs. 504.40 million in the corresponding period of 1972-73.

INDIA'S AGRICULTURAL MACHINERY POPULAR ABROAD

India's export trade in agricultural machinery and implements has been on the rise. These exports improved to Rs. 6 million during 1972-73 as against Rs. 3.6 million in 1971-72.

The principal product lines exported relate to tractors and such other appliances for preparing and cultivating soil as also machinery for harvesting, threshing and sorting purposes and a variety of machinery parts. The major importing countries during 1972-73 were Sri Lanka, Iran, Zambia and Nigeria for the soil preparation and cultivation appliances while Nepal was the best market for harvesting and threshing machinery. Nepal and Bangladesh were prominent markets for tractors and trailer combinations.

While such is the modest export performance of the agricultural machinery sector, the industry has made notable success in terms of domestic production and product diversification. The agricultural tractor industry, for instance, has a licensed capacity of 48,000 numbers per year with seven units in the line of production. These units have achieved a production of 18,300 numbers during 1972. Ten more units have been recently licensed with a total capacity of 99,000 numbers per year. The tractor industry is covered under priority sector in India and all possible encouragement is being rendered to facilitate its production. The tractor manufacturers are also producing matching agricultural implements for tractors. At the close of 1972, the licensed capacity was of the order of 36,000 numbers per annum. As against 5 units licensed, only two have gone into production and two more are expected to go on stream shortly.

A Bangalore firm, M/s. Vicon Limited is producing combine harvestors with an installed capacity of 600 numbers per year. Their actual production during 1972 was 175 numbers valued at over Rs. 5 million. In addition to this firm, some more have approached the Government to take up the manufacture of self-propelled combines.

Six units have a licensed capacity of 560,000 numbers of agricultural discs per year. The production stood at 51,440 numbers in 1972 at a value of Rs. 2.8 million.

Covered under the list of priority industries, the power driven pumps sector is well established in the Indian economy and almost all types of pumps are produced. The licensed capacity in the field is nearly 497,000 numbers per year and the actual production during 1972 was of the order of 278,000 numbers valued at Rs. 172 million. Indian pumps are picking up in world demand and are presently exported to as many as 45 countries of the world. Domestic demand for special varieties of pumps for petro-chemicals, fertilizers and steel plants as well as for special applications is increasing every year in the country. Additional capacity in the line is being established to meet these requirements.

RISING EXPORT MARKETS FOR SUGAR MILL MACHINERY

India's sugar mill machinery industry had a nearly Rs. 12 million worth of export market during 1972-73. As against the trend in the previous decade and a half, the export value of this machinery reached an unprecedented level of Rs. 11 million in 1971-72. Wayback in 1965-66, the exports were only Rs. 0.5 million and Rs. 1.8 million in 1970-71.

Uganda was the most important importer of sugar manufacturing machinery during 1972-73 at a value of Rs. 7.1 million. Sugarcane crushers which had nearly Rs. 1.10 million worth of export market in the year were mainly supplied to Uganda, followed by Nigeria, Liberia and Ghana.

The sugar mill machinery industry can be stated to be fully established by now and the indigenous manufacturers are in a position to fabricate complete sugar plants of 1250/2000 tonnes or even high cane-crushing capacity per day. Some of the manufacturers are also in a position to produce sugarcane and beet diffusion plants. The present import content in this industry is roughly 10 per cent consisting mainly bought-out items like hydraulics, ball and roller bearings and centrifugal screens which are not available in the country. There are 16 units engaged in the industry with an installed capacity of the value of Rs. 28.2 million per year. The actual output during 1972 has been estimated at Rs. 180 million while it was of the order of Rs. 164 million in 1971.

An interesting feature of this industry pertains to the export orders received by some of the manufacturers for exports of diffusion plants. These export orders are expected to add further impetus to the production in the industry.

CASHEW KERNEL EXPORTS UP

Registering a sharp rise over the export turnover during January-August 1972 at Rs. 436.60 million, India's exports of cashew kernels during the same period of the following year (January-August 1973) secured foreign exchange amounting to Rs. 505.10 million. In terms of quantity, as against 42,501 tonnes (January-August 1972), 41,117 tonnes were supplied abroad (January-August 1973).

Destinationwise, U.S.A. constituted the largest buying country having purchased 14,762 tonnes (January-August 1973) improving its intake from 12,795 tonnes in the same period of the preceding year. Next to U.S.A., U.S.S.R. was the second best buyer which bought 14,620 tonnes as compared to 16,896 tonnes. Japan, the third important market, imported more at 2065 tonnes as compared to only 1300 tonnes. German Federal Republic more than doubled its intake from 571 tonnes to 1027 tonnes while Netherlands and Czechoslovakia bought more at 767 tonnes and 709 tonnes as compared to their purchases at 661 tonnes and 623 tonnes respectively.

However, Canada 3208 tonnes (in January-August 1973) against 3546 tonnes (in January-August 1972), U.K. (979 tonnes against 1425 tonnes), German Democratic Republic (781 tonnes against 1389 tonnes), Australia (771 tonnes against 986 tonnes) and Hong Kong (472 tonnes against 628 tonnes) were the markets which reduced their intake during the period under review of 1973 as compared to the preceding year.

Cashew shell liquid exports rose marginally to 3462 tonnes, valued at over Rs. 3.90 million during January-August 1973 as compared to 3284 tonnes at a value of Rs. 3.80 million (January-August 1972). United Kingdom, although topped the list of buyers having imported 1629 tonnes, bought less as compared to its purchases at 2264 tonnes during the corresponding period of the preceding year. Japan, the next prominent market almost doubled its intake from only 650 tonnes to 1210 tonnes and U.S.A. improved its purchases nearly five fold from only 60 tonnes to 300 tonnes.

Happily, alongside the increased export turnover of cashew kernels and cashew shell liquid, India's total import bill of raw cashewnuts came down to Rs. 200 million (January-August, 1973) as compared to Rs. 222.40 million in the corresponding period of the preceding year. In terms of quantity, 127,385 tonnes were imported as compared to 138,168 tonnes.

CONSISTENT UPTREND IN GRAMOPHONE RECORDS

Indian gramophone records have built up consistently expanding export markets over the last few years. The foreign exchange value earned from these exports hit a new record during 1972-73 at Rs. 5.65 million. The trends in these exports would present an interesting graph upward from Rs. 2.13 million in 1956-57 to Rs. 2.84 million in 1961-62, Rs. 4.15 million in 1966-67 and Rs. 4.34 million in 1971-72.

During 1972-73, Indian gramophone records were exported to 48 markets abroad. The British market was, however, the best customer at a value of Rs. 1.18 million. Next in importance were Czechoslovakia (Rs. 0.84 million), Singapore (Rs. 0.60 million). U.S.A. (Rs. 0. 45 million), Yugoslavia (Rs. 0.38 million), Trinidad (Rs. 0.32 million), Hungary (Rs. 0.38 million), Fiji Islands (Rs. 0.29 million) and Qatar (Rs. 0.16 million).

Apart from gramophone records, India also exports recorded tapes, and gramophone parts.

EXPORT PROJECTION OF IRON ORE

India would be able to export about 35 million tonnes of iron ore by 1978-79 as is evident from the Annual Meeting of Iron Ore Board. Currently, the country produces about 33 million tonnes of the ore out of which 20 million tonnes are exported. In order to achieve the export target of 35 million tonnes, the need for stepping up production mostly in the private sector has been underlined so that the infrastructure capacities could be fully utilised.

The Iron Ore Board, a public sector undertaking, has approached all the important private mine owners in Barajamda region in Bihar and Orissa and Bellary-Hospet region in Mysore, seeking information regarding the exploration, development, beneficiation and despatches of iron ore. The Board has initiated a survey to assess the actual utilisation of iron ore during the last five years, both in relation to domestic consumption and export. The set-up has an advisory body in respect of planning and development of iron ore deposits in the country. The Iron Ore Board is to advise on steps to promote iron ore exports consistent with the resources and indigenous requirements of iron and steel industry as also ensure co-ordination of infra-structure facilities for iron ore production.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

SPOTLIGHT ON SOAPS AND DETERGENTS

Against an installed capacity of 217,820 tonnes per year distributed among 44 manufacturers in the organised sector, the soap industry in India produced 293,000 tonnes in 1972. Production of laundry soaps in the country is reserved for development in the small scale sector leaving scope for expansion of toilet soap capacity in the organised sector. For the manufacture of toilet soaps, a scheme in the public sector has been approved and is under implementation.

Tallow, the major raw material for soap production is an item that has been imported but the organised soap units have come to diversify their raw materials base from tallow to non-traditional and non-edible oils, such as, rice bran oil.

In the synthetic detergents sector, there are five units with a production record of 62,000 tonnes in 1972 as against 50,000 tonnes in 1971. The detergent industry is included in the list of 65 selected industries in which full utilisation of installed capacity is permitted. In fact, the existing detergent units owned by either larger industrial houses or foreign concerns, approached the Government for authorising enhancement in their existing licensed capacity by cent per cent. One of the forms of encouragement being given to the detergent manufacturers is allowing liberal import of alkyl benzene which is the only raw material that needs to be imported in the manufacture of this industry With the recent trend of increased production of detergents, the availability of another important raw material, namely, sodium tripoliphosphate is also reported to be falling short of requirements and thus there is a need felt for this material also to be imported, though in limited quantities.

In addition to the five units that have been in the production line of detergents, there are two more units the capacity of which has been enhanced recently. Further, six more letters of intent have been issued for a total capacity of 60,000 tonnes per year. The new units are to be located - one each in the States of Rajasthan, Madhya Pradesh, Andhra Pradesh and Haryana and two in Uttar Pradesh. With a view to promoting the output of synthetic detergents, Government have also invited applications for setting up detergent units in some specified areas.

It would now be interesting to see the export performance of soaps and detergents. The overall export earning of soaps and cleansing and polishing preparations was of the order of Rs. 17.7 million in

1972-73. Soaps alone contributed Rs. 7.4 million. The export value of synthetic detergents was of the order of Rs. 9.2 million. Among soaps, household laundry soaps were supplied mainly to Nepal; this market imported worth Rs. 3.2 million out of a total export value for the product at Rs. 3.3 million. Toilet soaps other than dental soaps have found their way out mainly to Nepal, German Federal Republic, Thailand, U.S.A. and Afghanistan. Malaysia proved to be a good market for medicated soaps.

The Soviet Union, as in the years before, proved to be the most important market for synthetic detergents during 1972-73 also. Out of a total export value of Rs. 9.2 million, the U.S.S.R. imported worth Rs. 8.85 million. U.S.S.R. was also the best market for washing preparations.

In addition to soaps and synthetic detergents, the Indian industry has also succeeded in exporting polishes, pastes, powder and preparations, such as, abrasives including emery tripoli as also polishing applications of leather and metal.

ELECTRIC MOTORS

AN OUTLINE

Constituting an important segment in the heavy electricals industry in India, the electric motor sector has geared up to manufacture a wide variety of motors suitable for varied applications. Among the varieties that the industry can produce are induction motors which are screen protected, drip proof and totally enclosed fan-cooled type; slipring induction motors, explosion proof motors, loom and card motors for textile industry; geared motors, D.C. motors, commutator motors upto 10 h.p., a variety of fractional horse power motors and some categories of micro motors. These are suitable for end-uses in industries such as textiles, sugar, chemicals, mining, cement, rolling mills, boiler feed pumps, material handling equipment, industrial machinery and machine tools.

Including three in the public sector, there are 27 units producing electric motors in India today with an installed capacity of 3.45 million h.p. per year. The production was of the order of 2.74 million h.p. in 1972. The public sector undertakings have succeeded in manufacturing motors of large sizes and they are even capable of making motors up to 10,000 h.p.

A policy of liberalised industrial licensing is being followed for enhancing the installed capacity of the industry and recently under the liberalised policy one unit has been registered for production of motors of a capacity of 67,500 h.p. per annum. Additional capacity expected under fuller utilisation is assessed at 48,700 h.p. in addition to the 3.45 million h.p. per year available.

An analysis of recent trends in the motor industry on the basis of horse power would indicate that the output of electric motors above 20 h.p. has increased while those of smaller sizes required mainly for agricultural purposes has gone down. In electric motors up to 50 h.p., large number of manufacturers have replaced copper wound rotors with aluminium cast rotors.

Aside from the development and diversification witnessed by the industry, it has been earning increased sums of foreign exchange through exports. During 1972-73 the export effort amounted to nearly Rs. 8 million. A.C. squirrel cage induction motors are exported in the range of one to 100 h.p. and above. In the range of one to 20 h.p. this variety of motors has contributed an export earning of Rs. 1.4 million mainly from its supplies to Sudan, New Zealand, Malaysia, Fiji Islands and Kenya. The German Federal Republic was the major buyer for the A.C. squirrel cage induction motors in the range of 20 to 50 h.p. Out of total exports of this variety at Rs. 2.9 million, the intake of German Federal Republic was over Rs. 2 million. Iraq and Turkey happened to be the major buyers for these induction motors in the range of above 50 h.p. Exports were also effected for A.C. slipring motors up to 100 h.p. and A.C. single phase motors.

The entire groups of electrical power machinery and switchgears contributed as much as Rs. 56 million in foreign exchange during 1972-73. Apart from electric motors the other major export lines are transformers, circuit breakers, motor starters, switchgears and control gears.

AIR CONDITIONING AND REFRIGERATION INDUSTRY

The air-conditioning and refrigeration industry in India has been developing fast. New types and ranges of equipment are being manufactured in the industry to enable the economy to be self-sufficient.

In the industrial air conditioning and refrigeration equipment sector, India is self-sufficient in the equipment for cold storage, ice plants, fish storages, central air-conditioning plants for multi-storeyed buildings, offices and industrial units. All these are manufactured with fully developed equipment indigenously. The production which stood at nearly Rs. 20.5 million in 1965 has gone up five fold to reach the level of Rs. 105 million in 1972.

For the first time in the country, centrifugal packed chillers have been recently manufactured. The capacity of a single machine is about 515 tonnes of air-conditioning and this would cater to the need of large industrial establishments, multi-storeyed buildings and hotels. Two more firms have been recently issued letters of intent to take up the manufacture of centrifugal packed chillers. With these, India will not only become self-sufficient in its requirement but would also be able to export the equipment to world markets.

In the manufacture of sealed compressors, various ranges have already been produced for end-uses, such as, freezers, room air conditioners of 2.5 tonne capacity, water coolers and commercial refrigerators.

The room air-conditioners and domestic refrigerator industry is well established in India and the quality of the product is well comparable with international standards. Aftersale service facilities to consumers are also being improved. The production of domestic refrigerators and room air-conditioners in 1965 was 31,400 numbers and 11,900 numbers respectively and during 1972 the production has gone to nearly 93,500 numbers and 25,100 numbers respectively. While a capacity of 175,800 numbers of refrigerators per year has already been established in the country, proposals for creating additional capacity are being encouraged by Government. Letters of intent have been issued to a few firms recently for the purpose.

The air-conditioning and refrigeration industry has a bright record of export growth. Wayback in 1956-57, the export value was only Rs. 22,000. In 1960-61, it improved to Rs. 0.3 million, in 1965-66 it was of the order of over Rs. one million and in 1970-71 it was Rs. 6.1 million and an all time high was achieved in 1972-73 at the peak level of Rs. 9.6 million.

During 1972-73, domestic refrigerators and parts were exported mainly to Poland. Out of a total export earning from these products at Rs. 3 million, the Polish market absorbed as much as Rs. 2.75 million worth. In addition, non-domestic refrigerators and parts were also exported to countries like Kuwait, Sri Lanka, Arab Republic of Egypt and U.S.A.

Water coolers were mainly supplied to Kuwait, Dubai and Singapore for Rs. 1.2 million during 1972-73. The Arab Republic of Egypt was a notable market for ice making machinery.

IMPORT CONTENT IN INDUSTRIAL MACHINERY AND MACHINE TOOLS

The import content in quite a few industries of significance in Indian economy has been reduced over the years of planned production, according to the information received from the Directorate General of Technical Development of the Ministry of Industrial Development. A fall in import content is indeed an indication of the advance achieved in terms of product development and diversification as well as the success of import substitution and import saving.

In the mechanical engineering sector, for instance, it has been observed that a stage of near self-sufficiency has been reached in respect of major industrial machinery, industrial and power boilers, material handling equipment like conveyors, construction equipment, tea processing equipment, certain types of chemical equipment, asbestos cement production plant and diary equipment.

The import content in respect of industrial machinery is notably on the low side. The percentage of import content in sugar mill machinery is only 8. For cement machinery, the pack values of foreign exchange are Rs. 1.2 million and Rs. 1.9 million for wet process and dry process plants respectively. Compared to the production of cement machinery at about Rs. 32 million, the import content is thus on the low side. Comprising various items of equipment required in building and road construction work, the import content of building and construction machinery is only up to 10 per cent. For the production of tea processing machinery, the import content is less than 8 per cent, while for tobacco processing machinery, it is 7 per cent; rubber machinery 10 per cent; rayon machinery 8 per cent; mining and coal washery plants 8 per cent; metallurgical machinery 15 per cent; drilling equipment up to 15 per cent, reduction gears 15 per cent, weighing machinery 7 per cent and so on. For a complete paper plant up to 50 tonne per day capacity, the import content is 35 per cent. Even including scarce raw materials that are not available in the country, the import content for chemical and pharmaceutical machinery, is between 20 to 30 per cent.

The percentage of imports to total consumption in the machine tool sector has also fallen substantially over the last few years. In 1961, for instance, the total production of machine tools in India was of the order of Rs. 85 million but the import bill was as much as Rs. 179 million. There were also some exports to the tune of Rs. 1.5 million in that year and the total consumption was of the order of Rs. 262.6 million. The percentage of imports to total consumption was 68.13. The position in 1971 has changed : the total production rose to the level of Rs. 503 million, import bill was only of the order of Rs. 217 million and out of total consumption of the tools worth Rs. 690 million, the percentage of imports worked out to 31.50. Apart from improvement in the ratio of imports to total consumption, machine tools earned sizeable sums of foreign exchange through exports.

MOBILE OFFSHORE DRILLING PLATFORM ON BOMBAY HIGH

India's first offshore oil exploration is to commence soon in the Arabian sea. Named as 'Sagar Samrat', the country's first mobile offshore drilling platform is ready to drill the first well on the Bombay High.

Fabricated by a well renowned Japanese firm, M/s. Mitsubishi for the Oil and Natural Gas Commission (ONGC) of India, the platform is the third of its kind in the world. Estimated to cost over Rs. 110 million, the platform is a self-propelled and has a self-elevating jack up. The platform is most suited to undertake drilling operations in deeper waters in favourable weather conditions as also in shallow waters throughout the year. It has a capability of faster movement between locations and optimum drilling efficiency. It can also test and complete the wells. Equipped with almost all the facilities for its operation, the platform has an accommodation for 74 persons on board including for Captain's and radio operator's room. All the rooms are air-conditioned.

With 4 triangular legs, each of 113 metres long on which the drilling platform can be jacked up, the platform has electrical and hydraulic jacks and controls. It can drill in water depth up to 80 metres in fair weather. It has a self-contained drilling rig mounted on it which can go down to a depth of 5000 metres.

Having anchor winches for aft deck, chain lifting capstan for forward deck and two diesel driven cranes for lifting heavy machinery, the mobile platform is also equipped with fire fighting safety and life saving equipment. Aside from this, the deck of the platform has adequate means for disposing off crude oil or gas produced during testing of a well. A helipad has also been provided atop the living quarters to provide quick and efficient means of transport, particularly in the cases of emergency. In addition to the above facilities, it is also equipped with close circuit TV System which can be monitored by the Captain on the bridge.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PETRO-PROTEIN POWDER FROM DIESEL FRACTION

Using one of the yeast strains isolated from the soil collected from the diesel tank bottom of the protein pilot plant at the Gujarat Refinery, the Indian Institute of Petroleum's protein pilot plant has successfully completed nearly 4000 hours of continuous fermentation studies in the bench scale unit. It is claimed that this yiest can be employed for industrial fermentation also.

It is reported that this protein powder, after initial acceptability tests, can be supplied to dairy and poultry farms to supplement the feed for milching animals and egg laying birds. Similar protein concentrate has been developed from diesel fraction in the countries like U.S.S.R. and France. This has been found to be a very good protein supplement for use in dairy and poultry.

It is further reported that in the process for obtaining petro-protein powder, a parafinic substance, is also separated from high speed diesel which can be used in the manufacture of soaps. Currently, oil fats, derived from edible oils are being used in the production of soaps. The technologists of the Indian Institute of Petroleum, Dehra Dun, Uttar Pradesh, have successfully evolved know–how for replacement of oil fats with parafinic substance in soap manufacture. Based on the know–how supplied by IIP (Dehra Dun), M/s. Hindustan Lever, one of the leading soap manufacturing establishments in the country, conducted further research in their laboratory. The experiments thus conducted yielded desired results.

METHOD FOR PRAWN FLAKES DEVELOPED

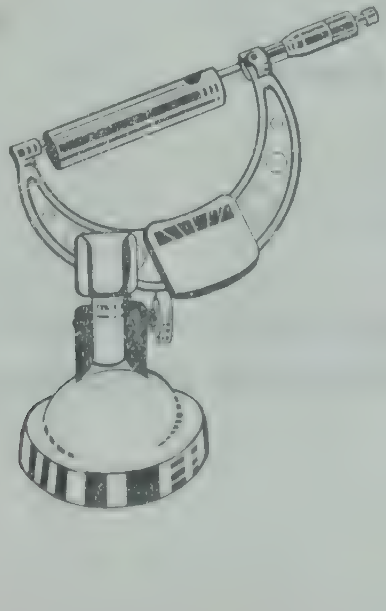
A method for preparation of prawn flakes has been developed by the Central Institute of Fisheries Technology (CIFT), Cochin recently. The method involves mixing of minced prawn meat with starch and other ingredients and steaming. After steaming, it is cut into desired siezes and shapes and then dried. Retaining the characteristic odour of prawns, the product when fried in edible oil, swells up and becomes very crisp. The sample prepared by the Institute was found to contain 15 to 20 per cent protein with satisfactory flavour, texture and keeping quality.

LAUNDRY DETERGENT POWDER DEVELOPED

The Regional Research Laboratory, Jorhat, has developed an inexpensive formulation for the manufacture of general purpose laundry detergent powder. It hasm any advantages. It costs less and compares well with similar product available in the market.

The process consists of dissolving the required quantity of optical whitener in water and adding of the blueing agent to this solution. Some chemicals and other solid compounds are then added to this solution. After thorough mixing under certain conditions, the detergent slurry is charged into a spray drier. Necessary perfume and sodium perborate are blended with the spray dried powder, packeted and sold.

All raw materials required for the manufacture of general purpose laundry detergent powder are indigenously available. Besides being less expensive and competitive in quality with other products in the market, the new product has the advantages of being manufactured easily with low capital investment.



DIRECTION PATTERN OF INDIA'S IMPORT TRADE

(In million rupees)

Region	1971-72	1972-73
Africa	**1437.30**	**1636.40**
Sudan	253.25	458.00
Arab Republic of Egypt	332.20	288.70
Tanzania	184.65	279.20
Zambia	209.00	278.00
Democratic Republic of Congo	49.40	67.70
Kenya	177.00	63.15
North America	**5320.15**	**3296.60**
U.S.A.	4186.90	2245.85
Canada	1133.25	1050.75
Latin America	**57.40**	**231.80**
Argentina	1.30	179.75
Peru	17.40	31.20
Brazil	16.40	12.10
ECAFE Countries	**3613.75**	**3888.45**
Japan	1616.00	1702.15
Iran	1263.55	1214.60
Australia	293.95	323.85
Afghanistan	48.00	160.30
Nepal	102.70	95.00
New Zealand	35.95	65.10
Thailand	37.60	54.85
Bangladesh	Negl.	31.55
Singapore	29.90	28.10
Other Asian and Oceanian Countries	**627.00**	**842.50**
Saudi Arabia	383.35	448.35
Kuwait	130.40	255.15
Iraq	35.65	66.00
East Europe	**2094.40**	**2178.00**
U.S.S.R.	873.20	1057.20
Poland	504.50	344.85
German Democratic Republic	202.90	188.20
Czechoslovakia	101.70	155.20
Hungary	86.75	142.80
European Economic Community Countries	**2537.60**	**3175.25**
Federal Republic of Germany	1270.35	1607.20
Belgium	343.25	492.00
France	370.70	369.00
Italy	244.70	355.90
Netherlands	308.55	351.10
European Free Trade Association Countries	**2508.15**	**2660.75**
U.K.	2208.10	2254.85
Sweden	127.10	185.00
Switzerland	78.30	113.20
Total of all Countries	**18245.40**	**17967.35**

Source : Department of Commercial Intelligence and Statistics, Calcutta.

PROFILE ON ALKALI CHEMICALS

Included in the list of core industries, basic chemicals, such as, soda ash, caustic soda, calcium carbide and liquid chlorine have come to be well established in India. These constitute the major raw materials in the manufacture of a variety of consumer goods, such as, soaps, oils, textiles, paper, rayon, non-ferrous metals, petroleum refining, drugs and pharmaceuticals and food processing.

Four manufacturing units produced 485,970 tonnes of *soda ash* in 1972 as compared to 478,950 tonnes in 1971. In response to the increasing demand for the heavy or dense variety of the product from industries like glass, bangles, bichromates and sodium silicate, its availability has been gradually increasing in the country. A good portion of the normally produced light soda ash is converted into dense variety by the compression process and granulated into larger particle size compared with the light grade. In addition to the four existing units with an installed capacity of 0.5 million tonnes per year, there are three substantial expansion schemes for 243,000 tonnes per year and 8 new schemes for 517,000 tonnes per year approved by the Government. Out of these schemes approved so far, a capacity of 243,000 tonnes of soda ash per year is likely to be implemented during 1975-76.

Limited quantities of soda ash are being exported at a value over Rs. 0.5 million. Both the dense and light varieties of the products were supplied mainly to Nepal and Bangladesh during 1972-73.

Notwithstanding the difficulties like shortage of graphite anodes, the production of *caustic soda* in 1972 was stepped up to 391,100 tonnes as compared with 379,780 tonnes in 1971. There were 29 manufacturing units engaged in this industry during 1972. The total installed capacity stood at 428,225 tonnes per year during 1972 as compared to 372,125 tonnes per annum in 1971. The major process adopted for the production of caustic soda is the electrolytic mercury-amalgam process. Through this process, the production was as much as 308,000 tonnes during 1972. The three varieties of caustic soda manufactured are 'lye', 'fused solid' and 'flake'. To cover the gap between indigenous demand and production, it was felt necessary to generate additional capacity on an expeditious basis and a crash programme to do so in some of the existing units has been recently undertaken. There has also been some progress in the indigenous fabrication of mercury cells and diaphragm cells on the basis of designs of some of the imported cells available in the existing units. With improved technology on rubber lining of the fabricated mercury cells, a few caustic soda units succeeded in improving their production by installing such indigenous cells that would synchronise with the working of the existing equipment. In the Electrochemical Research Institute at Karaikudi, development work on domestic fabrication of dimensionally stable anodes is also in progress.

Some quantities of caustic soda, both in the flake and solid forms are being exported. The flake variety was exported to the tune of Rs. 0.5 million and the solid variety at Rs. 0.36 million during 1972-73. The major importers were Bangladesh and Indonesia.

Liquid chlorine is another alkali chemical variety the production of which is well established in India. There are 23 manufacturing units with an installed capacity of 245,100 tonnes per year. Actual production in 1972 was of the order of 147,470 tonnes. This item is also exported, though in a limited quantity. During 1972-73, nearly Rs. 0.6 million worth of chlorine was exported mainly to Kuwait.

With an installed capacity of 25,800 tonnes per annum, the output of *stable bleaching powder* in 1972 increased to 18,830 tonnes from 16,720 tonnes in 1971. One of the existing units has developed its own know-how for the manufacture of calcium hypochlorite with 65 to 70 pet cent chlorine availability compared to 33 to 35 per cent chlorine content in stable bleaching powder. A letter of intent has been issued to this unit for the production of high grade of hypochlorite with a capacity of 3000 tonnes per year which is equivalent to 6000 tonnes of stable bleaching powder in terms of chlorine content. As and when this high bleaching powder variety goes on manufacturing stream, a major portion of it would be utilised for export.

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The export value of bleaching powder stood at Rs. 1.86 million during 1972-73. Burma, Bangladesh, Sri Lanka and New Zealand were the principal importers.

Four manufacturing units were engaged in the production of *sodium hydrosulphite* during 1972 with an installed capacity of 12,300 tonnes per year. Actual output during the year was of the order of 7760 tonnes. Despite the increase in indigenous production (which was only 5870 tonnes in 1971), the product is being imported to the tune of 2000 tonnes to tide over the gap between the domestic supply and demand. A new scheme for the manufacture of this product with a capacity of 3,000 tonnes has been approved recently on account of adoption of new technology developed abroad. Once the scheme is implemented, the recurring foreign exchange expenditure on import of raw materials like zinc dust would be substantially reduced. Also the finished product would be made available at lower cost and new avenues for export are expected to open up.

Sodium and ammonium bicarbonates are yet other areas of progressive manufacture in the Alkali chemical industry. With an installed capacity of 28,100 tonnes per annum, the production of sodium bicarbonate rose to 23,940 tonnes during 1972 as against 19,720 tonnes in the preceding year. Though there has been an improvement in its production, domestic demand for the pharmaceutical grade has not been fully met and as such, part requirements of B.P. grade sodium bicarbonate are being met through imports. Mainly produced by the Sindri and Trombay units of the Fertilizer Corporation of India as also by one of the existing soda ash units, ammonium bicarbonate has an installed capacity of 8,300 tonnes per year and its production was of the order of 5,510 tonnes in 1972. The Fertilizer Corporation of India succeeded in earning foreign exchange through its exports to the confectionary industry in some of the developing countries like Iran and Singapore. Sodium bicarbonate exports were, however, more prominent in the export trade during 1972-73 at a value of Rs. 0.32 million with Bangladesh as the major recipient.

The production of *caustic potash* stood at 8,320 tonnes during 1972 as against its installed capacity of 12,400 tonnes per year. One of the two existing units manufacturing caustic potash succeeded in exporting their production to developing countries in South East Asia and also Australia. Its exports during 1972-73 amounted to Rs. 0.5 million, with Australia, Indonesia and U.K. as the principal importers.

Calcium carbide was produced to the extent of 68,800 tonnes in 1972. In the year, the output of *potassium carbonate* was nearly 2530 tonnes. These items have been in short supply and part requirements are being met through imports. Steps have, however, been taken to create additional capacity. Imports of sodium metal have been banned with two units achieving a production level of 145 tonnes in 1972 against available capacity of 740 tonnes. □

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MAN-MADE FIBRE PLANT AND KNOW-HOW TO WEST GERMANY

Man-made fibre industry is rapidly growing in India. In the last two decades, the industry has not only improved the annual rate of production but also spared surplus for export purposes. In recent years, this sector has even started exporting process know-how which would ultimately culminate in the erection of plants for manufacturing machinery required for fibre production.

M/s. J. K. Synthetics, 'Kamla Tower', Kanpur, Uttar Pradesh, one of India's leading firms in the manufacture of synthetic yarn, has lately started providing process know-how, basic engineering and technological equipment to countries overseas. It has recently supplied the know-how, and equipment to Federal Republic of Germany for an ethylene glycol recovery plant which is a part of the polyester plant in that country. The Indian firm's foreign exchange earning from this contract amounted to Rs. 700,000.

The Kanpur firm, it is claimed, has received a sizeable contract worth Rs. 30 million from Africa for building a nylon and polyester filament yarn plant. Accordingly, it is to supply polymerisation and spinning machinery which would be manufactured in India.

The firm has recently set up a plant near Ghaziabad in Uttar Pradesh in collaboration with a well renowned West German firm, M/s. Karl Fischer. It is capable of offering for the first time in the country complete synthetic fibre and allied plant which include know-how, basic engineering project management, equipment and machinery construction, commissioning and other technical consultancy services. The firm's plant set up at Kota, Rajasthan for the manufacture of synthetic yarn was the first factory of its kind in the country. The plant mainly manufactures monofilament, multifilament and crimped yarn. It is further learnt that the firm's Research and Development wing has recently developed an improved process for modifying nylon-6 so that the modecular structure of the fibre with respect to dye-sites is substantially altered. The modified version of the Nylon-6 is named as 'Nova Colour Nylons' and the same can be dyed with anionic as well as with cationic dyes, depending upon the needs.

Of the two firms engaged in the commercial production of nylon yarn and cord in the country, namely, M/s. J. K. Synthetics Limited, Kota (Rajasthan) and M/s. Nirlon Synthetics Fibres and Chemicals Limited, Bombay, the installed capacity (per annum) of the former is 1000 tonnes and that of the latter is 1400 tonnes.

India offers a wide range of machinery (non-electric) to world markets. During 1972-73, the exports were of the order of Rs. 293.60 million as compared to Rs. 241.60 million in the preceding year. The export range broadly includes power generating machinery (other than electric), agricultural machinery and implements, office machines, metal working machinery, textile and leather machinery, machines for special purposes and machinery and appliances and machine parts.

INDIAN DYESTUFF POPULAR ABROAD

M/s. Atul Products Limited, P.O. Atul, Via Bulsar, Gujarat State, a well established firm in the manufacture of dyes, chemicals, pharmaceuticals and dye intermediates exported their products during 1972-73 to the tune of Rs. 11.80 million, almost doubling these from Rs. 5.6 million in the previous year. The products of the firm are sought by a large number of countries abroad including the developed ones.

The range of production of the firm covers a large number of items, such as, sulphanitic acid, tobias acid, phenyl J. acid, bon acid, J-acid urea, rhodulene acid, gamma acid, G-salt, phenylperi acid, chicago acid, H-acid, dinitrostibene disulphonic acid, diaminostilbene disulphonic acid, diaminostilbene acid (Di Sodium salt), P-Nitrotoluene sulphonic acid, metanilic acid and sodium naphthionate. Recently, it has received a licence to step up production of P-tolyl sulfonyl ethyl carbamite, a pharmaceutical intermediat from 40 tonnes to 100 tonnes every year. Anoth licence to produce 100 tonnes of carbamite annuall has also been received by it. It also intends to produc monoethyl, a starting raw material for carbamit Under the liberalisation scheme of the Governmen its licence for production of phosgene has been raise from 600 tonnes to 1036 tonnes per annum while tha of chlorosulphonic acid from 3000 tonnes to 4000 tonne per annum. It has active plans to expand its plan for caustic soda and many other products. It is soo to introduce microdispersed dyes in granular form i the market.

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Several industries in India including textiles, leather, paper, wool and beverages are making extensive use of dyestuffs and dye-intermediates manufactured by the firm. Overseas markets too have recognized the competitive nature of the firm's products.

India, a sizeable importer of dyeing, tanning and colouring materials as also a wide variety of chemicals and pharmaceutical products a few years ago, has emerged as a competent supplier of these products, in the post-independence period. During 1972-73, the dyeing, tanning and colouring materials secured foreign exchange at Rs. 92.65 million, registering a sharp increase over that of the preceding year's at Rs. 54.50 million while chemical elements and compounds earned Rs. 76.45 million as against Rs. 71.75 million. Indian medicinal and pharmaceutical products exports too improved moderately to a level of Rs. 103.25 million during 1972-73 from Rs. 96.25 million in 1971-72.

FOOTWEAR TO WORLD MARKETS

A highly labour intensive and export oriented industry, leather footwear is currently making rapid strides in production as well as in exports. In recent years, the industry is securing foreign exchange in growing volume. The year 1972-73 witnessed the industry's exports reaching an all time high level of Rs. 128.60 million. In fact, the exports reached this level from Rs. 91.85 million in 1968-69, Rs. 92.30 million in 1969-70, Rs. 114.40 million in 1970-71 and Rs. 117.60 million in 1971-72.

During 1972-73, 14.35 million pairs of footwear were supplied abroad as compared to 15.60 million pairs in 1971-72 and 13.35 million pairs in 1970-71.

During 1972-73, all leather closed–toe–footwear was the most popular variety overseas. It had alone fetched foreign exchange amounting to Rs. 51.15 million and 2 million pairs were supplied to a large number of markets. U.S.S.R. alone bought 1.28 million pairs at a cost of Rs. 41.70 million. U.S.A. (Rs. 2.75 million). Nepal (Rs. 2.68 million) and U.K. (Rs. 1.35 million) were significant among other buyers.

All leather open-toe footwear constituted the next best variety popular among foreign buyers. About 3.77 million pairs were exported to nearly six dozen countries at a cost of Rs. 32.50 million. U.S.A. was the largest single importing country having bought 2.55 million pairs valued at Rs. 21.10 million. Australia, Canada, Nepal and U.K. were prominent among other markets.

Rubber–soled upper canvas footwear which earned Rs. 27.85 million during the year were mainly imported by U.K. (Rs. 6.90 million), U.S.S.R. (Rs. 4.57 million), Zambia (Rs. 3.58 million), Denmark (Rs. 2.75 million), Canada (Rs. 1.58 million), Bulgaria (Rs. 1.50 million) and Netherlands (Rs. 1.49 million). Rubber-soled upper leather footwear variety also was equally active in exports during the year. It secured Rs. 13.17 million and U.S.A., Zambia, U.K., Australia and Canada were the principal importing countries.

In addition to these major varieties, rubber footwear, leather soled and embriodered uppers footwear, leather soled footwear, rubber or plastic soled footwear, footwear with other soles, gaiters, leggings, cricket pads and other footwear with sole and upper of rubber/plastic were some other varieties exported during the year.

Adding to the export success of the footwear industry during 1972-73, M/s. Carona Sahu Company Limited, Fort House, 221, Dr. Dadabhoy Naoroji Road, Bombay, exported footwear of various types to a large number of overseas markets including the developed ones. Its foreign exchange earning in terms of value crossed the Rs. 10 million mark during the year. In fact, firm registered more than 100 per cent increase in exports during the year from a level of Rs. 4.65 million in the preceding year.

India's footwear industry is largely in the cottage and small sector of India, accounting for about 140 million pairs per annum. In the large scale sector, the installed capacity is over 23 million pairs per annum and actual production is around 15 million pairs. An additional capacity of 3 million pairs has been approved in the organised sector and this is likely to be implemented within a few years. Development of additional capacity in the industry has been reserved for the small scale sector except for cases of expansion and establishment of new units for export markets.

REPEAT ORDERS FOR PETROL PUMPS FROM SOVIET UNION

A sizeable repeat order has been secured recently by M/s. Larsen & Toubro, Ballard Estate, Bombay, from the Soviet Union for the supply of petrol pumps and garage equipment. Of the total value of these orders at Rs. 7 million, petrol pumps are to contribute Rs. 3 million. This firm has the credit of having more than doubled its export performance to reach the level of Rs. 16 million during 1972-73 as compared to the year before. Besides U.S.S.R., the firm's overseas customers include several of the developing and the developed markets, both near and far.

From tractors and bulldozers to cranes and conveyors, drilling equipment and turbine pumps, power transmission equipment including transformers, switchgears and cables as well as a surprising range of industrial machinery, the firm is engaged in the manufacture of quite a diversified area of engineering products. Every year it adds new products to its output stream. Only recently it has commenced the manufacture of sophisticated equipment for nuclear power projects. Moulded case circuit breakers, switchboards of novel designs, electronic timers and static electric control systems are among the other varieties of new product range that the firm has established itself.

The Bombay firm also undertakes the erection assignments including installation of electricals and instruments for various chemical and food processing plants, steel works, power plants and piping jobs. Its civil engineering activities cover designing and construction of industrial structures. It also undertakes turnkey jobs comprising all stages–from blue print to commissioning of plants.

OVERSEAS SUPPLY OF CONSTRUCTION KNOW-HOW

India's export promotional activity is being constantly diversified to include new areas of exports, such as, know-how supply, consultancy services and establishment of joint ventures. M/s. National Buildings Construction Corporation's (NBCC), recent endeavour in the export context of know-how and machinery is a notable example of the competence developed by the country in this line.

NBCC is to enter into a contract with Construction Corporation of Iraq to provide technical know-how for piling work for the overhead tanks, it is learnt. Besides know-how, it is also to supply indigenous machinery required for the project. The agreement is stated to be initially valid for five years but after the stipulated period, the entire machinery is to be handed over to the Iraqi authorities at a depreciated value. The assignment also involves supply of Indian technical staff for training of local staff in that country.

The Corporation's construction activities specifically aim at bringing down the cost of construction, to improve the quality of construction and to undertake works of special nature. Recently, it has completed a 603 bed Eastern Command Military hospital complex at Calcutta costing Rs. 24 million. The hospital was constructed within a fairly short period. It has further evolved new dimensions in the area of construction technology based on the latest techniques and methodology. It has also entered into the specialised fields of construction and had undertaken to construct projects on a turnkey basis. The Corporation's planning cell undertakes planning, phasing and scheduling of works with a view to ensure timely completion of construction works. It is further proposed to enlarge the scope of the cell to cover architectural and structural designing. It has also proposed to undertake preparation of feasibility study reports and plan jobs on turnkey basis.

EXPORT PERFORMANCE AND POTENTIAL

EXPORT PROSPECTS FOR 1973-74

India's export trade in the first quarter of 1973-74 (April-June, '73) at Rs. 4600 million was higher by about Rs. 20 million than the export value during the corresponding quarter of 1972-73. The prospects of exports during 1973-74 would indeed depend on the state of the economy as well as the trading conditions abroad. The recent drought and power shortages have had an adverse effect on production and export surpluses of a number of agricultural and industrial products but the monsoon has been fairly good and the prospects of restoration of power cuts are expected to improve industrial activity during the second half of 1973-74. The supply position in regard to the agricultural and agro-based products is also expected to improve. On balance, there is every possibility of achieving the 7 per cent rate of growth during the year as envisaged under the Fourth Five–Year Plan.

The Fourth Five–Year Plan (1969-74) envisaged that the country's export trade would rise progressively from a level of Rs. 13,600 million during the base year 1968-69 to Rs. 19,000 million by the end of the plan i. e. 1973-74. This implied a growth rate of 7 per cent per annum. On this basis, exports during the Fourth Five-Year Plan period are to aggregate to Rs. 83,000 million.

The country's export trade continued to rise during the first four years of the Fourth Plan but the growth rate was substantial during 1972-73. Export value at Rs. 19,610 million during 1972-73 showed a growth rate of 22 per cent over 1971-72 and exceeded the 1973-74 plan target of Rs. 19,000 million–a year in advance. Roughly speaking, exports during the first four years of the Fourth Plan increased at a compound rate of 9.7 per cent per annum against the target of 7 per cent envisaged in the Fourth Plan. The cumulative total of exports during the four years of the plan amounted to Rs. 65,170 million.

On the basis of present indications, the export prospects for 1973-74 in respect of items like jute goods, leather and leather manufactures are not likely to be as bright as in the preceding year. With a view to improve the competitive position of jute goods vis-a-vis synthetics, a substantial cut in the export duty of hessian and carpet backing has already been effected and that on sacking abolished. At the same time, the prospects in respect of a number of other items are considered good. Overseas demand for Indian cotton textiles continues to be strong which will help boost up these exports. In view of the recent pick up in world steel production, demand for iron ore is also likely to show appreciable increase, particularly from Japan during 1973-74. Sizeable offtake of oilcakes is envisaged. The outlook for coffee is also good.

Export of engineering goods which constitute an important line of export promotion are expected to register significant increases during 1973-74. Inadequate supply of raw materials and shortage of power have been the major problems of the engineering industry, but restoration of power supply and greater availability of imported and indigenous steel under the current import policy are marked as the factors in favour. Export potential in regard to certain other non-traditional items, such as, marine products, chemicals, handicrafts and artsilk goods is also considered bright. With the improvement in production, sugar exports too are likely to show recovery.

EEC'S TARIFF CONCESSIONS TO INDIA'S JUTE AND COIR PRODUCTS

Pursuant to intensive negotiations with the European Economic Community, India has recently secured tariff concessions on two products of her export importance, namely, jute and coir. Under the agreement, the Community's tariff on carpet backing would be reduced by 40 per cent on January 1, 1974 and another 10 per cent on January 1, 1975. On other jute products, the tariff would be reduced by 40 per cent on January 1, 1974 and additional 20 per cent on January 1, 1975. In regard to coir manufactures, the Community's tariff would be reduced to 16.2 per cent and 12.8 per cent on the respective dates. The important question of continued duty-free entry for both these products in the U. K. market, however, still remains to be settled. The matter would be further considered by the Community.

Serious and chronic adverse balance of trade has characterised India's trade relations with the European

Economic Community. The Community market is one of the most sophisticated and competitive in the world. After the entry of U. K., Denmark and Ireland into the Common Market, the European Economic Community accounts for more than 40 per cent of world trade. Even if India is able to capture a modest percentage of the Community's market, it would substantially improve her exports and close the trade gap.

India was among the first few countries to establish diplomatic relations with the Community. Since then she had been pursuing with the Community the question of removing various barriers to her trade and improvement of access to her export products. Her efforts have not been without significant results. In the 'Sixties, the Community abolished tariff on a number of items of India's export interest like tea (in bulk), East India Kips, pepper and cardamom. Substantial quotas for the export of her cotton textiles were also secured. The Community established duty–free quotas for handloom fabrics and handicrafts too. The Generalised Scheme of Preferences introduced by the Community with effect from July 1, 1971 which provided for duty-free entry for the manufactures and semi-manufactures from the developing countries would also benefit exports from India.

Although some important concessions have been granted by the Community in the past, problems in some of the important and sensitive trading areas like jute and coir were not resolved. The enlargement of the European Economic Community by the membership of U. K., Denmark and Ireland has added to these residual problems.

The U. K. has been one of the largest markets for India's export products. In regard to certain important items like bobacco, oilcakes, cotton textiles and woollen carpets, U. K. has been the single largest export market for India. Apart from historic factors, the unrestricted duty-free and/or preferential tariff in U. K. applicable to Commonwealth countries, played an important part in making U. K. a significant market for a large number of India's export items. Following the U. K.'s entry into EEC, U. K. is obliged under the Treaty of Accession to introduce the Common Customs Tariff of the Community progressively with effect from January 1, 1974. U.K. will begin with 40% alignment on January 1, 1974 and on July 1, 1977, the U.K.'s tariff will be completely aligned with the common customs tariff. The introduction of the Community's tariff and other commercial policies of the Community in U.K. would mean the loss of traditional trading advantages for Indian exports.

The Joint Declaration of Intent annexed to the Treaty of Accession to EEC concerning the membership of U.K., Denmark and Ireland expressed the will of the Community to extend and strengthen trade relations with developing countries like India and to find solutions to their trading problems arising from the enlargement of the Community. Consultations have already taken place to mitigate the adverse effects on India's export trade.

Protracted negotiations have been going on with the Community for the last several years for improving the access for India's jute and coir products. The Community maintains a tariff of 22 per cent on carpet backing and 15–20 per cent on hessian and sacking. In regard to coir manufactures (other than yarn), the Community tariff is as high as 23 per cent. In contrast, in U.K., on both jute and coir, India enjoys a Commonwealth preferential tariff of zero. India's concern has been that difficulties confronted by her jute and coir in the Common Market would get extended and accentuated following the application of the Community's tariff by U.K.

Faced with large and persistant advarse balance of trade with the Community, the basic issue is one of establishing a viable commercial relationship with it. At the Community level, India is still lacking an instrument to promote harmonised trading relationship. This lacuna would, however, be removed once the Trade Co operation Agreement which is now under negotiations is concluded between India and the Community. An important component of the agreement relates to development of trade exchanges between the two sides on the basis of comparative advantage and mutual benefit.

EXPORT PERFORMANCE OF TOBACCO

India's export trade of un-manufactured tobacco during 1972-73 was about 95 million kgs. valued at Rs. 613 million. The exports during the first half of 1973-74 (April-September 1973) were 44 million kgs. valued at Rs. 441 million against 58.7 million kgs., valued at Rs. 440 million in the corresponding period of 1972-73.

The quantitative decline in the exports during the first half of 1973-74 was mainly due to the reduced offtake by the Soviet Union, Bulgaria, Hungary, Bangladesh and Somalia. The exports to the U.K. and Western Europe have, however, gone up both in terms of quantity and value.

In 1972, the export value of un-manufactured tobacco was nearly Rs. 577 million (80 million kgs.) while the export earning of tobacco products amounted to Rs. 33 million (3.94 million kgs).

India's present annual production of tobacco is in the region of 350,000 tonnes, out of which Flue Cured Virginia (FCV) tobacco accounts for 90,000 to 100,000 tonnes. FCV is the most important variety and contributes to the bulk of exports, amounting to about half of the production of this variety.

Indian tobacco is exported to more than 50 countries in the world, the principal buyers being U.K., U.S.S.R., Japan, German Democratic Republic, Irish Republic, Netherlands, Belgium and Bangladesh.

The major tobacco products exported are cigarettes, bidis, hooka tobacco, scented zardas, chewing tobacco and snuff. Tobacco products are exported mainly to U.S.S.R., Nepal, Malaysia, Singapore, Kuwait, Bahrein Islands and Saudi Arabia.

With a view to avoid unhealthy cut-throat competition, floor prices are fixed by the Government every year for the exportable varieties of tobacco. There is a compulsory Agmark grading for quality control and pre-shipment inspection for tobacco.

INDO-BULGARIAN TRADE PROTOCOL

A Trade Protocol for 1974 envisaging trade turnover of Rs. 740 million between India and Bulgaria has been signed recently.

Besides exports of traditional commodities like jute manufactures, deoiled cakes, iron ore, tea, coffee etc. from India to Bulgaria, there are a number of engineering and non-traditional items including consumer goods, such as, leather footwear and leather goods, aluminium cables, steel ropes, chemicals, drugs and pharmaceuticals, sports-goods in the Trade Protocol.

Principal items of import from Bulgaria to India during 1974 will be fertilisers, rolled steel and steel products, organic and inorganic chemicals, pharmaceutical products, drugs and certain engineering goods.

Matters relating to expansion and diversification of trade between the two countries were also discussed between both the Governments.

India's exports to Bulgaria during 1972-73 were of Rs. 188.60 million which were higher as compared to the exports in the preceding year at Rs. 154.80 million. In the same year, India's imports from that country totalled Rs. 87.50 million as against Rs. 138 million in 1971-72.

ENCOURAGING EXPORT TREND IN SPICES

India's export trade in spice moved up to fetch Rs. 135.5 million in the first five months (April-August, 73) of 1973-74 as compared to Rs. 100.65 million in the same period of 1972-73. Quantumwise, the export supplies were 16,760 tonnes and 17,418 tonnes. This improvement is to be viewed against the background of the fall in the industry's foreign exchange earning in the preceding year. During 1972-73, the exports were of the order of Rs. 291.30 million as compared to Rs. 361.75 million in 1971-72.

In April-August 1973, pepper, cardamom (small and big), turmeric, cumin seed, celery seed, fennel seed, cassia, garlic, aniseed and tejpat varieties of spices improved their offtake sizeably as compared to their overseas supply in the corresponding period of the last year. However, chillies, ginger, curry powder coriander seed and fenugreek supplies slided down moderately.

Valuewise and quantitywise, pepper exports improved to Rs. 64.18 million (8035 tonnes) during April-August 1973 from Rs. 45.64 million (6348 tonnes) during April-August 1972. Cardamom (small) too improved its offtake to Rs. 34.95 million (574.65 tonnes) from Rs. 24.50 million (610.50 tonnes) while turmeric exports went up to Rs. 8.55 million (2179 tonnes) from Rs. 7.48 million (2948 tonnes), cumin seed looked up to Rs. 5.70 million (1068.50 tonnes) from Rs. 2 million (511.70 tonnes), celery seed supplies went up to Rs. 4.60 million (1065.80 tonnes) from Rs. 3.05 million (408.96 tonnes), fennel seed exports jumped to Rs. 2 million (409 tonnes) from Rs. 1 million (333.55 tonnes), cassia exports too rose to Rs. 2 million (337.75 tonnes) from nearly Rs. 1 million (203.70 tonnes).

Among the varieties of spices the overseas offtake of which reduced during the period under review of 1973-74 as compared to that in the preceding year, ginger exports came down to Rs. 7.73 million (1739 tonnes) from Rs. 8.00 million (2538.50 tonnes). Curry powder too was exported less at Rs. 2.80 million (505.30 tonnes) as compared to Rs. 3.75 million (821.40 tonnes) and chillie exports looked down to Rs. 0.40 milllion (73.55 tonnes) from Rs. 1.43 million (313 tonnes). Coriander seed was one more variety of reduced offtake during the period which brought less amount at Rs. 0.62 million (191 tonnes) as compared to Rs. 0.89 million (425 tonnes).

During 1972-73, the export composition was: pepper of all kinds Rs. 143.15 million (20.45 million kgs); cardamom of all types Rs. 69.46 million (1.44 million kgs); ginger Rs. 21 million (6 million kgs); turmeric Rs. 18 20 million (6.73 million kgs); cumin Rs. 9.20 million (2.18 million kgs); celery seed Rs. 7.58 million (1.83 million kgs); curry powder Rs. 7.55 million (1.53 million kgs), chillies Rs. 3.50 million (0.78 million kgs.); cassia Rs. 3.30 million (0 65 million kgs); fennel seed Rs. 2.54 million (0.72 million kgs); fenugreek seed Rs. 2.10 million (1.20 million kgs); coriander seed Rs. 2.05 million (0.93 million kgs) and other spices Rs. 1.53 million (0.34 million kgs.), Tejpat, saffron, aniseed and cinnamon were the other varieties of spices exported during the year.

U.S.S.R., U.S.A., Canada, Czechoslovakia, Italy, Poland, Hungary, Yugoslavia, Singapore and Rumania were the principal markets for pepper while Kuwait, Saudi Arabia, U.S.S R., Bahrein Islands, Japan, Qatar and German Democratic Republic were the main importers of cardamom. Ginger was imported by a larger number of countries among which South Yemen Peoples Republic, Saudi Arabia, U.S.A. and Yemen Arab Republic were significant. U.S.A., Iran, U.K., Japan, Libya, Mauritius and Dubai were leading markets for turmeric while cumin seeds were mainly bought by Singapore, Nepal and Japan. Celery seeds were purchased by about two dozen countries while among a large number of markets that imported curry powder, U.S.A. was prominent. Nepal, U.S.A. and Canada were the main buyers of chillies during the year.

EXPORT OF BASMATI RICE

Export of Basmati Rice is permitted through the State Trading Corporation of India as a canalised item based on the quota agreed to by the Department of Food, Government of India. The quota is fixed on a yearly basis. Actual exports during 1971-72 were of the order of Rs. 19.26 million (11,920 tonnes) and Rs. 17.40 million (9615 tonnes) in the first nine months of 1972-73 (April-December). This variety of rice is mainly exported to the West Asian countries such as Kuwait, Bahrein Islands, Saudi Arabia and Dubai. Small quantities are also supplied to U.K., U.S.A., Singapore, Hong Kong and Mauritius.

In the context of the food situation in India on account of drought, the policy regarding Basmati rice export was reviewed in early 1973-74. It was decided that the temporary short supply position in India should not mean giving up its export market. The exports are not going to be more than 20,000 tonnes which would hardly make any difference in the overall requirement of nearly 36 million tonnes in the country. But the valuable foreign exchange that the country is likely to earn out of these exports might, in fact, come handy for the import of coarse foodgrains; the export of a tonne of basmati rice under normal international price would enable India to import about 3 to 4 tonnes of coarse grain. On an average, about 0.0003 per cent of the total production of rice is only exported annually.

INDIA'S TRADE WITH BANGLADESH

The value of Indian exports to Bangladesh during 1973-74 amounted to Rs. 1583 million as against Rs. 430 million in 1971-72. Imports from that country amounted to Rs. 31.5 million as compared to a negligible value in the comparable year.

Among Indian exports to Bangladesh during 1972-73, the principal categories were fish, unmanufactured tobbaco, raw cotton, road motor vehicles, non-electrical machinery, cement, cotton yarn and thread, handloom and cotton fabrics, coal, medical and pharmaceutical products, paper and manufactures, woollen blankets and travelling rugs, mill-made cotton fabrics and readymade garments. Among the items imported into India were raw cotton, fish and newsprint paper.

AGARBATTIS EXPORTS UP

The rising export trend in agarbattis is once again visible during 1972-73 when the foreign exchange earning crossed the Rs. 15 million mark for the first time. The exports, in fact, improved to the level of Rs. 15 85 million during the year under review from only Rs. 10 million in 1969-70, Rs. 12.75 million in 1970-71 and Rs. 14.10 million in 1971-72.

In the long list of overseas buyers during 1972-73, U.S.A., as in the preceding year, retained its position of the principal importer having purchased worth Rs. 3.76 million. However, as compared to its intake in the preceding year at Rs. 4 milllion, its imports came down marginally. Nigeria emerged as the next important buyer which replaced Ethiopia as the second significant purchasing country in the preceding year, by improving its intake from Rs. 0.88 million (1971-72) to Rs. 1.75 million (1972-73). Ethiopia too purchased more at a value of Rs. 1.60 million as compared to Rs. 1.38 million while Singapore improved its imports marginally at Rs. 1.30 million from Rs. 1.20 million.

In addition to the above markets, U. K., Canary Islands, Canada, France, Netherlands, Nepal, Kenya, Malaysia, Australia, Federal Republic of Germany, Siera Leone, Saudi Arabia, Lesotho and Dubai were the other destinations.

PROTECTION TO EXPORTERS FROM CURRENCY FLUCTUATIONS

The international currency experience in recent years has come to affect Indian exporters out of fear for possible changes in the par value of foreign currencies. While short term exports involving no deferred credit or long delivery periods would be somewhat affected, export contracts involving deferred credit and short term deliveries are likely to be affected more on account of the time factor in realisation of the export proceeds. The Reserve Bank of India has been operating a scheme providing for forward exchange cover up to 12 months against fluctuations in Pound Sterling. This scheme has proved inadequate to meet the requirements of exporters desirous of supplying goods abroad on deferred payment terms. The normal assumption of a certain rate of growth at the time of bidding for a contract would be taken for granted. Indeed, this is a crucial factor in the cost-profit computation and any decline in the exchange rate would be to the disadvantage of the exporter.

In view of this, the Government of India are contemplating formulation of a scheme to protect exporters from the uncertainty caused by currency fluctuations. The scheme which is under finalisation, is expected to enable the exporters to obtain exchange risk cover in respect of deferred payment contracts up to ten years. The Reserve Bank of India would be the agency administering the scheme on behalf of the Government and would levy charges on a sliding scale for providing the cover. Besides Pound Sterling and U.S. Dollars, the Reserve Bank of India would gradually extend cover to other currencies. The facility would be available to specified export items and the exporters would be required to get the terms of contract for the export of these items approved by the Reserve Bank of India.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

SPECIAL MEASURES FOR DEVELOPMENT OF SELECTED INDUSTRIES

The Directorate General of Technical Development in the Ministry of Industrial Development is constantly engaged in reviewing the growth of production capacities and actual production in various industries in relation to the growing needs of the Indian economy and undertake special measures to cover the industrial and technological gaps, if any. During 1972-73, the Organisation has undertaken certain measures not only to improve the existing production capacities but to enable product diversification and import saving also in these industries.

In the mechanical engineering sector, a stage of near self-sufficiency has already been reached in respect of major industrial machinery, industrial and power boilers, material handling equipment like conveyors, construction equipment, tea processing equipment, weighing machinery, certain types of chemical equipment, asbestos cement production plants and dairy equipment. Import content in respect of various industrial machinery has been reviewed from time to time. In most of the important industries, the percentage of import content in the total output is well under control. For sugar mill machinery, tea processing machinery, mining and coal washery plants, tobacco processing machinery and weighing machinery, the ratio of import content is less than 8 per cent. For metallurgical machinery it is up to 15 per cent. For rubber machinery as also building and construction machinery, the ratio is up to 10 per cent. For industrial and power boilers respectively, it is 8 to 12 per cent and 25 per cent (exclusive of steel items), for chemical and pharmaceutical machinery it is 20 to 30 per cent including scarce raw materials not available indigenously and for paper and pulp machinery 30 to 35 per cent (for complete paper plant up to 50 tonnes per day capacity).

In the machine tool sector, indigenous production has been revealing consistent growth. In 1961, the value of production was of the order of Rs. 85 million. In 1965, it increased to Rs. 255 million. In 1970, it went up to Rs. 375 million and reached a peak level of Rs. 503 million in 1971. In these years, the percentage of import to total consumption of machine tools worked out to 68, 59, 34 and 31, per cent. The import bill which stood at Rs. 179 million in 1961 went up to Rs. 352 million in 1965 and came down to Rs. 183 million in 1970 and Rs. 217 million in 1971. In other words, the dependence on import trade of machine tools has gradually come down indicating improved self-reliance in the industry. In fact, the industry has come to earn sizeable sums of foreign exchange by way of exports; the export value was above Rs. 31 million in 1971.

On the question of research and development in the machine tool sector, the Central Machine Tool Institute (CMTI), Bangalore, has made good headway. The research findings of not only this Institute but those of the major machine tool manufacturing units have helped achieve progress on import substitution front. During 1972-73, M/s. Greaves Cotton, Nasik have initiated steps to manufacture sock roller bits for the first time in India, the requiremet of which has been till recently met through imports. Another unit, M/s.

Hada Steel Limited, Faridabad, have commenced the production of hacksaw blades and with the production of this unit, it is hoped that the present shortage of the item would be eliminated.

The cables and wires industry utilises large qauntities of aluminium, E.C. grade copper and PVC resins. These items have been in short supply and inspite of shortages, maximum efforts have been made to maintain the raw material supply position to this industry.

In view of the shortage of raw materials, such as, graphite electrodes, heavy melting scrap and refractory materials in the metallurgical industries sector, the Government of India have taken measures to improve their supply position. The import of graphite electrodes has been allowed to the extent of shortfall in domestic production and this items has been canalised for imports through the State Trading Corporation of India. To meet the shortages of heavy melting scrap, part of the requirements are being met through imports through the Minerals and Metals Trading Corporation of India. Refractory and refractory materials have also been canalised for imports through MMTC.

In the chemical and allied industries sector, the Development Council for Organic Chemical Industries mainly engaged itself with the elimination of wastes, maximization of production, improvement in quality and reduction of costs. Import substitution is another important aspect of the industry. For inorganic chemicals, demand for various basic and alkali chemicals were studied and tentative targets for capacity and production by the end of the Fifth Five-Year Plan period (1978-79) were indicated for caustic soda, soda ash, calcium carbide and sodium hydrosulphite. In respect of acids and salts, the DGTD assessed the present production, demand and targets for production capacity for alums, bichromates, mineral acids, cryolite and aluminium fluoride, chlorates and perchlorates and calcium carbide. In respect of pesticides, it is suggested that by 1978-79, 100 million hectares may be covered by plant protection measures as compared to present coverage of 37.5 million hectares; accordingly the pesticide requirement by that year would be about 77,420 tonnes as compared to the current level of 30,000 tonnes.

The capacity for the cement industry has been recommended to rise to the level of 21 million tonnes by 1973-74. The demand for cement is expected to rise to 28 million tonnes per year by 1978-79, necessitating an additional capacity of 12 million tonnes sought to be set up during the Fifth Plan period. It is suggested that the entire capacity of 12 million tonnes should be based on plant and equipment obtained from the manufacturers of cement machinery within the country itself. It is also suggested that the production of ordinary portland cement should be supplemented by increasing the output of pozzolana, masonry and slag cement, ensuring full utilisation of the available granulated slag and other industrial wastes. Intensive and extensive surveys of lime stone deposits are sougth to be carried out and fine and rejected limestone in steel plants are to be used by blendings with steel grade limestone. A capacity of 0.5 million tonnes might be set up by way of installing 6 to 8 shaft kiln plants of capacity of 200 tonnes per day. It is further suggested that the cement machinery manufacturers in India should be enabled to produce 1000 to 1200 tonnes per day dry process plants.

To increase the current rate of export earnings in the leather industry, it was felt necessary to have a change in the present pattern of exports of various types of leathers to enable improved exports of finished leater and leather manufactures' capacity of semi-processed hides and skins. It would be necessary to set up suitable infrastructure for the production of the former. It has been estimated that the investment requirement for the purpose of conversion of at least 75 per cent of the exports of semi-processed hides and skins effected during 1971-72 would be about Rs. 600 million with a foreign exchange component of Rs. 100 million. The additional foreign exchange earnings by exports of finished leather would be Rs. 900 to 950 million per year. If a portion of finished leather is further converted and exported as leather footwear and other leather goods, the foreign exchange component could be higher.

For the development of paper, pulp and allied industries, it is felt that concerted efforts should be made by the paper industry to procure machinery from the indigenous sources to the miximum extent so that the acute foreign exchange shortage could be met and indigenous machinery manufacturers could be encouraged. Utilisation of unconventional raw materials should also be encouraged. For the Fifth Five-Year Plan, ending 1978-79, a task force for the paper industry has suggested that the capacity and production respectively of paper and pulp should be 1.5 million tonnes and 1.33 million tonnes respectively, for newsprint 400,000 tonnes and 350,000 tonnes and for pulp rayon 230,000 tonnes and 205,000 tonnes.

The Development councils of the DGTD for different industries have been seriously engaged in improving the efficiency and capacity of the industries coming under their purview. The members of these councils include noted representatives of the industry concerned, labour, consumers and those having specialised knowledge of the other technical aspects. The preceding paragraphs are only indicative of the endeavours of DGTD in providing a helping hand to the development of the various industries in the Indian economy.

OUTLOOK ON INDUSTRIAL VALVES

For the manufacture of industrial valves and cocks, there are nine units in India with a total registered capacity of about 1.9 million numbers per year. Three of these units are engaged in the production of sophisticated valve and cocks with a rgistered capacity of 169,000 numbers per year. The current installed capacity of ordinary and sophisticated types of industrial valves and cocks are 1.86 million numbers and 162,000 numbers respectively per year. The total production during 1972 was of the value of Rs. 100 million which was about 30 per cent higher than the production achieved in the preceding year. The turnover of sophisticated industrial valves has particularly increased in money value from Rs. 50 million in 1971 to Rs. 73.30 million in 1972.

Of the three units that are engaged in the production of sophisticated industrial valves, one is in the public sector, namely, M/s. Bharat Heavy Electricals Limited, Tiruchirapalli. Its installed capacity for the valves is 70,000 numbers per year and its production was valued at Rs. 44 million in 1972. The percentage of the increase in production of this unit in 1972 over that of preceding year was about 50 in terms of value.

The valves and cocks industry neither falls within the purview of the Industries (Development and Regulation) Act, indicating its importance to the economy nor is reserved for development in the small scale sector. Fresh capacity in this field is being encouraged by the Goverment simply due to the fact that there has been a growing demand, particularly for the sophisticated industrial valves in the country. The Government have under consideration proposals for expanding production capacity in this industry to the level of Rs. 210 million (288,460 numbers) per year.

Import trade in ordinary valves into India is banned. Import of sophisticated industrial valves is permitted on a restricted basis. During 1971-72, the import of sophisticated valves was of the order of Rs. 30 million.

Though a non-priority industry, the valves and cocks sector constitutes an important import saving industry. During 1972, indigenous production of sophisticated industrial valves has helped save foreign exchange to the extent of Rs. 73.30 million. Manufacture of sophisticated industrial valves involves various precision operations for which foreign collaboration is permitted by the Government. Currently, out of three units that are engaged in the manufacture of sophisticated valves, two units including M/s. Bharat Heavy Electricals Limited are enjoying foreign collaboration.

Industrial valves made in India have also successfully entered the export market. During 1972-73, their export trade fetched Rs. 6.45 million (nearly 1 million kgs). The major importers were Poland (Rs. 2.66 million) and Malaysia (Rs. 1.58 million). Singapore, Kenya, Iran, Iraq, Bangladesh, Sudan, Thailand and U. K. were among the other customers. In addition to the export trade in industrial valves, tapes and cocks both of iron and steel and non-ferrous metals secured Rs. 1.7 million during the same year. Malaysia was the leading importer.

MPORT SUBSTITUTION IN BALL AND ROLLER BEARINGS

The ball and roller bearings industry is included n the priority list of industries in India. There are seven units active in the industry now. Their installed capacity is nearly 21 million numbers (1972). The total production of the bearings was 21.5 million numbers in 1972, representing an increase of about 14 per cent over that of 1971. Principal types and sizes of bearings developed indigenously are about 600 while they were nearly 500 in 1971.

In addition to the seven units that are existing, the letters of intent have been issued to new units as well as for substantial expansion of the existing units have a total capacity of 22.83 million numbers. As the industry figures in the list of 65 priority industries where the Government of India are prepared to consider increased capacity on the basis of maximum utilisation, some of the existing bearings and steel ball manufacturers have been granted endorsement for higher capacities in their licences.

In view of the crucial nature of the industry as a feeder to automobiles, industrial machinery and machine tool industries, it was assigned IDA (International Development Agency) priority for the purpose of allocation of raw materials. All the seven units are currently in production. Six are in the private sector and only one, namely, M/s. Indo-Nippon Precision Bearings, Hyderabad is in the State Sector.

The principal raw materials required in the industry are high carbon chromium and other seamless alloy steel tubes, bars, wires, wire rods and cold and hot rolled steel strips. There has been substantial improvement in the indigenous availability position of high carbon chromium steel bars and wires. The major requirement of raw materials, namely, alloy steel, seamless tubes is, however, being imported. Efforts are under way to develop the indigenous capacity for these steel tubes. A special extra deep drawing quality of strips required for cages/retainers are also imported but it is expected that strips of right quality will be soon developed indigenously.

Ceramic and other type of grinding wheels including ball grinding wheels which are essential requirements of this industry have been developed indigenously to the extent of about 70 per cent. Honing studs up to 400 grit are also available within the country. There has been encouraging improvement in the turnover of roller rings which substitute imported steel tubes for the production of inner and outer races of large sized bearings.

The development of 100 new types and sizes of ball and roller bearings during 1972 has added to the import substitution effort and foreign exchange savings. Also some large sizes of these bearings above 100 mm bore were developed for the first time for supplying to the steel plants. Needle roller bearings for tractors and other industrial applications as well as needle roller cages for commercial vehicles manufactured by M/s. TELCO were also developed indigenously for the first time during 1972. The import bill on account of ball and roller bearings was of the order of Rs. 122.6 million during 1971-72 and Rs. 107.65 million in 1972-73.

The export value of ball and needle roller bearings during 1971-72 amounted to Rs. 1.58 million while in the following year it was of the order of Rs. 0.70 million. The importing countries mainly comprise Sri Lanka, Australia, UK, Nepal, Netherlands and Korea Democratic Republic.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

ANTIFUNGAL PAPER DEVELOPED

The Central Leather Research Institute (CLRI), Madras, has successfully developed an antifungal paper which prevents growth of mould on leather.

India which exports a large number of footwear and other types of leather articles, suffers considerable loss owing to mould growth during transport. The salient features of the antifungal paper are that the fungicidal effect lasts for about a year; the paper produces no irritation to humans and it is inexpensive and at the same time superior to other similar products available in the market.

The annual demand for the fungicidal paper is estimated at 87 million sq. ft.

The paper can be prepared without difficulty by cottage industries or those engaged in making leather goods auxiliaries.

METHANE GAS FROM COWDUNG

Most of the cowdung which can be converted into a rich manure is either being wasted or burnt for cooking purposes. For better utilisation of cowdung, Khadi and Village Industries Commission has come out with a 'Gobar Gas' (methane gas) scheme.

The scheme is likely to give a boost to the rural economy and change the shape of rural India when adopted on a large scale. The Gobar Gas plant is available in sizes from 60 cubic feet to 3,000 cubic feet to suit individual farmer and the Community. The plant once constructed as per the specifications requires only nominal expenditure for its maintenance. What is required is regular supply of cowdung. Night soil and other organic waste can also be used. The scheme offers inexpensive source of fuel and light, as also rich manure to enhance food production.

The Commission has so far constructed about 4,000 'gobar gas' plants in the country.

ELECTROLYTIC PRODUCTION OF COPPER POWDER

The Central Electro-Chemical Research Institute (CECRI), Karaikudi (Tamil Nadu), has developed a process for the electrolytic production of copper powder from copper sheet.

There are three methods available for the production of copper powder : (i) spraying molten metal through the fine nozzles into an inert gas; (ii) reduction of oxides of copper in a furnace and (iii) deposition by electrolytis from a copper solution. Of these methods, the most preferred is the electrolytic methods not only on account of its simplicity and elegance but also due to the fact that the product obtained is very pure. Powders of variety of particle sizes could be readily prepared by suitably modifying conditions of electrode position.

Adopting the process developed by CECRI, it is possible to set up a plant to meet the present indigenous requirement. The influence of the various parameters affecting the deposition have been carefully studied and the preferred working ranges of concentrations have arrived at. The conditions of stabilisation which constitute a crucial step have been worked out.

The process has been studied on bench scale using 200 amp cell. A bench scale unit capable of producing 1.5 kg. per 8 hours day was worked for about a month.

The main raw materials required in the process are copper scrap, copper sulphate, sulphuric acid, ammonia liquor and stabiliser. All these are available indigenously.

The required items of plant and machinery include rectifier, R.C.C. pitch lined cells, storage tanks, pump sets, centrifuge, vacuum shelf drier, grinder, air classifier, bushbars, grinding and buffing sheels, weigh scale, reduction furnace and distilled water plant.

Copper powder finds application in powder metallurgy in the manufacture of sinted compacts of complicated shapes and of porous and self-lubricating bearings. Copper powder of 300 mesh size is used as a tixin in certain types of antifouling paints for ship bottoms. Further, organic chemical industries utilise fine copper powder as a reductant.

MULTI-LATERAL TRADE NEGOTIATIONS AND INDIA'S STAND

The Government of India have decided to participate in the Multi-lateral Trade Negotiations, popularly known as Nixon Round of Trade Negotiations, under the auspices of the General Agreement on Tariff and Trade (GATT), scheduled to commence in Geneva in the spring of 1974 and conclude in 1975. India has been already taking part in the GATT negotiations for safeguarding her trading rights resulting from the enlargement of the European Economic Community, extending her trade with other developing countries and restructuring her tariff rates to take care of her trade and development needs. The forthcoming Multilateral Negotiations will give her yet another opportunity for securing reduction elimination of both tariff and non-tariff barriers affecting her export trade.

It may be recalled that the Ministerial Session of the Contracting Parties to the GATT, held in Tokyo in September this year, adopted a Declaration which spelt out the objectives of the Multi-lateral Trade Negotiations to take place.

One of the important objectives of the GATT is to reduce obstacles to the free flow of international trade. To achieve this objective trade negotiations are arranged under its auspices from time to time to bring down tariffs and other barriers to trade on a multilateral basis. So far, six rounds of multi-lateral trade negotiations have been conducted by the GATT. As a result, tariff charges for a large number of products entering into World trade have been reduced.

Following the agreement arrived at among the developed countries on re-alignment of the rates of different currencies, two joint declarations were made by the U.S.A. and EEC and by the U.S.A. and Japan in early 1972. These declarations expressed the intention of the parties to convene under the aegis of the GATT a comprehensive multilateral trade negotiations, the principal aim of the negotiations being to enlarge the export markets and earnings of the developing countries.

The proposed trade negotiations are going to be different from those that took place in 1950s and 1960s. The earlier negotiations mainly concentrated on tariffs and did not give sufficient importance to the problems of non-tariff barriers. Also the negotiations in the past were successful in lowering tariff barriers on industrial products but they did not have an impact on barriers in agricultural products. This situation has created a serious imbalance for the agricultural exporting countries between the obligations they have undertaken in the GATT and the benefits they have received.

As compared to the techniques adopted at the Kennedy Round of Negotiations held during 1964-67 which mainly concentrated on tariff cuts on a linear basis, the proposed negotiations would lay emphasis on non-tariff barriers, such as, quantitative restrictions, customs valuation procedures, health and sanitary regulations which distort international trade.

The proposal for convening the Multilateral Trade Negotiations was the subject matter of discussions at the Third U.N. Trade and Development Conference (UNCTAD III) held in Santiago in April-May, 1972. These discussions led to the adoption of a resolution calling for close association of the Group of '77' developing countries in the evolution of the techniques for the proposed Multilateral Negotiations. The Contracting Parties of GATT decided in November 1972 that the new negotiations should cover all classes of products including agricultural products and should deal with non-tariff barriers as well as tariff problems. The developing countries emphasised that their participation in the new negotiations would be conditional upon the techniques and modalities to be adopted and they proposed that the developed countries should not expect full reciprocity.

India's stand in the Multilateral Trade Negotiations would be that the tariff and non-tariff barriers in respect of agricultural products as well as the products in the industrial sector which are of current and potential export interest to India should be eliminated; internal taxes and other fiscal charges on tropical products, such as, tea and coffee, which are not domestically produced in developed countries should be abolished; problems involved in the trade in tropical products should be

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dealt with separately and special treatment should be accorded to such products: the scope and coverage of the Generalised Scheme of Preferences (GSP) should be widened; likely reductions in Most Favoured Nation (MFN) rates of duties in the negotiations should not erode the benefits accrued to the developing countries under the GSP; the developing countries should have a guaranteed share in the increasing volume of world trade and developed countries should not ask for reciprocity from the developing countries.

The Ministerial Session of the Contracting Parties of GATT held in September, 1973 in Tokyo adopted a declaration spelling out the objectives of developing countries in the proposed negotiations. These include additional benefits for the international trade of developing countries; substantial increase in their foreign exchange earnings; diversification of their exports; acceleration of the rate of growth of their trade taking into account their development needs; improvement in the possibilities for these countries to participate in the expansion of world trade and a better balance between developed and developing countries in the share of the advantages resulting from this expansion; substantial improvements in the conditions of access for the products of interest to the developing countries and measures designed to attain stable, equitable and remunerative prices for primary products. ☐

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FROM TOY BALLOONS TO AUTO TYRES

From a modest beginning in 1946 as a toy balloon factory, the Madras Rubber Factory, Dhun Building, 175/1, Mount Road, Madras-2, has today emerged as one of the largest tyre manufacturers in India. With a capacity to manufacture almost 1 million automotive tyres and 2 million bicycle tyres every year, the factory exports to 30 countries and earns foreign exchange of about Rs. 10 million every year.

The factory has collaboration with M/s. Mansfield Tyre Manufacturing Company of U.S.A. for technical know-how as well as 20 per cent of equity capital. Under the initial contract with the American collaborator, the factory could export tyres to any country in the world except U.S.A. and Canada. But this condition was later on waived and now they export many varieties of tyres to U.S.A. — boat trailer tyres, tyres for antique and classic cars which are used in show racing, tyres for mini-bikes, sports–wagons and mobile homes.

Apart from exporting its tyres to 30 countries the world over - in Europe, the West Asia, Hong Kong, East Africa and United States, the Madras factory has achieved progress in terms of import substitution. They have developed indigenous machinery to utilise rubber better and to improve their end-product, the tyre. They have not only succeeded in manufacturing certain machinery at home but in improving the imported equipment too. Of its four plants, the company has two in Tamil Nadu, one in Kerala and another in Goa. The Goa factory was recently inaugurated and was set up with very little foreign exchange involvement.

The company has for the first time in India, introduced the nylon car tyre. This tyre variety indeed has many advantages in a country like India which is tropical and of great distances.

EXPORT TRADE IN GUMBOOTS

With the conclusion of a sizeable export contract worth Rs. 5.3 million for supply of 600,000 pairs of rubber gumboots to North America, M/s. Swastic Rubber Products Limited, Swastic House, Poona-3, added one more variety to the footwear Industry's export stream. The contract was won by the firm against stiff global competition which amply proves the supreme quality and price competitiveness of India-manufactured footwear.

The manufacturing range of the firm includes a number of products, such as, rubber insulated electric cables, gumboots, combat boots, hose pipes, injection bottle caps, industrial and automobile parts, meteorological balloons, oil seals, rubberised fabrics, rubber bands, surgical and industrial gloves, synthetic rubber cots, tyre retreading material, erasers, pressure hoses, latex and rubber adhesives, ladies and gents chappal, canvas shoes, jungle boots, plastic vacuum formed articles, polyurethene coated and P.V.C. coated fabrics.

India's footwear industry is a highly labour intensive and export oriented. In recent years, it has emerged as an important foreign exchange earning sector. During 1972-73, the industry fetched as much as foreign exchange equivalent to Rs. 128.60 million which was higher by over 9 per cent as compared to that in the preceding year at Rs. 117.60 million.

During 1972-73, U.S.S.R. constituted the foremost buyer of Indian footwear, having purchased over Rs. 48 million worth. Varietywise, its intake was : all leather closed-toe footwear Rs. 41.68 million (1.28 million pairs); rubber footwear Rs. 1.85 million (0.14 million pairs) and rubber-soled upper canvas footwear Rs. 4.57 million (0.57 million pairs). Next to U.S.S.R., U.S.A. was the second largest destination which bought Indian footwear during the year valued at Rs. 28.77 million. Of this, the share of all leather open-toe footwear alone accounted for Rs. 21.12 million (2.54 million pairs), followed by rubber-soled upper leather footwear at Rs. 4.35 million (0.52 million pairs) and all leather closed-toe footwear at Rs. 2.75 million (0.21 million pairs).

Besides these two major markets, among other buying countries, U.K., Nepal, Australia, Denmark, Canada, Canary Islands and Netherlands were significant.

India's total exports of leather and leather manufactures totalled Rs. 1745 during 1972-73 which registered significant increase over the preceding year's value at Rs. 907.65 million. During the first four months of 1973-74 (April-July 1973), the exports of semi-finished leather, footwear and other leather manufactures fetched foreign exchange at a value of Rs. 364 million which were higher by about 113 per cent over the

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export earning in the corresponding period of the previous year at Rs. 171 million. Of the earning during April-July 1973, chrome tanned leather alone brought in Rs. 294 million as against only Rs. 94 million (April-July 1972). U.S.S.R. was the largest recipient responsible for the bulk of import. Footwear and components earned Rs. 24 million while furs netted Rs. 14 million.

MEDICINES TO SOVIET UNION

The medicinal and pharmaceutical industry has contributed over Rs. 103 million to India's export trade in 1972-73, registering a moderate increase from over Rs. 96 million in the year before. The exports rose to this level from only Rs. 40 million in 1968-69, Rs. 59.75 million in 1969-70 and Rs. 84.65 million in the following year.

India's pharmaceutical products are being sought by a large number of customers abroad in growing volume every year. Even sophisticated markets like U.S.S.R., U.S.A., U.K. and Federal Republic of Germany are among the bulk importers. The export range of the industry includes quite a large number of products among which medicaments, alkaloids, antibiotics, vitamins and vaccines are prominent. During 1972-73, medicaments alone secured Rs. 70.45 million, accounting for more than 70 per cent of the entire export value. In the preceding year, the export value was Rs. 59.50 million. U.S.S.R., U.K., U.S.A., Nepal, Bangladesh, Federal Republic of Germany, Sri Lanka, Switzerland, Poland, Hungary, Iraq and Australia were the leading buying countries for medicaments during 1972-73. Opium alkaloids which secured Rs. 12.25 million during 1972-73 as against Rs. 11.85 million in 1971-72, were mainly imported by Federal Republic of Germany, Bulgaria, U.S.S.R., U.S.A., Czechoslovakia and U.K.

M/s. Hoechest Pharmaceuticals Limited, Bombay, has recently airlifted pharmaceutical specialities worth Rs. 2.5 million to the Soviet Union. With this order, the firm's export turnover for the year (1973) touched the figure of Rs. 10 million mark.

It is reported that the firm is further negotiating with Russian authorities for more export orders in the line. The products of the firm are popular among others in Australia, Bangladesh, Japan, Mexico, Arab Republic of Egypt and South Korea.

Pharmaceutical industry in India has a record of consistent production growth and diversification. The total production during 1971 is estimated at Rs. 3000 million. The industry's production range covers antibiotics, anti–dysentry drugs, anti–diabetic drugs, anti-leprosy drugs, anti-pyretics and analgestics drugs, anti-T.B. drugs, anaesthetics, anti-malarials, alkaloids and allied drugs, sulpha drugs, vitamins and other drugs.

EXPORT ORDER FOR NATURAL RUBBER

India's Rubber Board, Kottayam, has recently concluded a contract with Singapore for the supply of 500 tonnes of rubber. The agreement was pursuant to the visit of some rubber dealers of Singapore to India.

During 1972-73, India's exports of crude rubber (synthetic and reclaimed) earned Rs. 1.50 million. In terms of quantity, 1.07 million kgs. were supplied to countries including Iran, Malaysia, Syria, Zambia and U.S.A. The export range included natural rubber, crepe rubber sheets (unmanufactured) and reclaimed rubber. The Indian Government's recent decision to encourage exports in the line are sure to promote its foreign exchange earnings.

During January-October 1972, India's production of natural rubber was of the order of 82,625 tonnes while that of synthetic rubber was 25,256 tonnes. In the corresponding period of 1971, the figures of production respectively were 74,686 tonnes and 27,593 tonnes.

EXPORT PERFORMANCE AND POTENTIAL

INDIA'S SHARE IN WORLD TRADE

Notwithstanding the increase of about 18 per cent in export from $ 2051 million in 1971 to $ 2415 million in 1972, India's relative share in world trade ($ 366,000 million) remains constant at 0.66 per cent. During these two years, the share of developed market economies increased by 18.5 per cent and that of developing countries by nearly 16 per cent.

Two major factors which are responsible for India's low share in world exports are that traditional products still continue to have considerable weightage in India's exports and that large and growing domestic demand in the country for both, agricultural and industrial products—tea, tobacco, oilcakes, cashew kernels, spices, ores, semi-processed hides and skins, cotton textiles, jute manufactures, coir and coir manufactures–are among the primary products on the export of which Indian economy continues to depend considerably. The relative share of these items to the total export trade, no doubt, has been going down but yet on a rough basis they accounted for nearly two-thirds of India's total exports in 1971-72 against the share of about 85 per cent in 1960-61. Global trade in respect of such primary exports is subject to wide fluctuations, both in terms of quantum and value. On the other hand, world demand in respect of new manufactures, such as, engineering goods and chemicals is rising at a fast pace. This is why the share of the developed economies specialising in these items in rising at a higher rate than that of developing economies.

The internal market in India being large and expanding, there is a growing tendency among the Indian manufacturers to divert their products homeward for immediate profits. Apart from these major factors, the Indian exporter has been faced with shortage of basic raw materials like steel, non-ferrous metals and oilseeds, inadequate transport and port facilities, inflationary tendency and rising cost of production and power shortage. On the demand front, there have been the factors like the development of synthetics, use of smaller quantum per unit of output, technological improvements and protectionist policies of the industrialised countries by way of imposition of high tariff quotas and levies on products of Indian interest, inadequate space and high shipping freights and recently currency fluctuations due to unsettled international monetary situation.

To be able to improve the volume of export trade and to carve out a larger share in the ever expanding world export trade, the Government of India are indeed undertaking suitable measures to promote exports. The exploration of foreign markets, generation of export surpluses and stepping up of export production are the continuous techniques being followed by the Government. Among their export promotion measures are the supply of imported raw materials through replenishment licensing, removal of capacity constraints and stepping of export production, abolition and reduction of export duties wherever justified and granting of drawbacks of import and excise duties. The role of public sector agencies is also being expanded in the country's export and import trade so as to encourage exports and control the import bill. Import policy for the current financial year (1973-74) has been made more export oriented allowing for increased import facilities, supplying certain indigenous raw materials at international prices and extending the scope of export obligation to certain other industries.

JOINT VENTURES EARN FOREIGN EXCHANGE

Of 90 active joint industrial ventures abroad with Indian assistance, 37 projects have already gone into production and the rest are in various stages of implementation. More than half of the 37 projects have gone into production recently, that is after 1969 and it is too early to expect any dividend income from them. Others that went into production earlier earned foreign exchange equivalent to Rs. 16.34 million by way of dividends, technical know-how fee and managerial fee up to March 1973. Besides an amount of Rs. 90.70 million was secured in foreign exchange (up to March 1973), from additional export of machineary, equipment and raw materials to these joint ventures, over and above the exports made against Indian equity participation.

The total Indian investment by way of capital contribution in the projects in production and in those under implementation is nearly Rs. 71 million and Rs. 118 million respectively. Out of these investments, Rs. 65.45 million and Rs. 83.30 million respectively were through exports of plant and machinery and the balance through the capitalisation of technical know-how fee.

Out of the 37 projects that have started production, six units belong to the group of M/s. Birlas. Earnings from these units by way of dividends and know-how and other fees amounted to Rs. 10.72 million. In addition, an amount of Rs. 33.5 million was earned by these six units through extra exports over and above their equity participation. Others that have substantially contributed towards the export earnings relate to the projects of M/s. Jay Engineering Works in Sri Lanka, M/s. Kirloskar Oil Engines Limited in West Germany, M/s. Anil Hard Board in Canada and M/s. Raymond Woollen Mills in Kenya.

The various fields of collaboration covered by the joint ventures are textiles, engineering, cement, sugar, chemicals and pharmaceuticals. The two salient features of the policy followed by the Government of India in regard to joint ventures are that no cash remittance would be allowed for overseas investment and that the Indian industrialists would be encouraged to go abroad for joint ventures only for such industries where there is surplus machinery production and where internal demand for the product is largely covered. The policy is a major instrument of export promotion and economic cooperation among developing countries.

EXPORT OF SHRIMPS TO JAPAN

Japanese demand for shrimps has been rapidly increasing. Presently, the import demand for the item in that country is estimated at 90,000 tonnes at a value at Rs. 1500 million per year. In fact, the Japanese shrimp import accounts for about 41 per cent of their total import of marine products. A conservative estimate is that by 1980 shrimp imports into Japan would be about 140,000 tonnes.

Shrimps account for about 80 to 90 per cent of India's total export of marine products. Japan constitutes the foremost market for India's frozen shrimps, the other principal markets being U.S.A., Australia and West European countries. In 1972-73, India's total exports of shrimps (frozen, canned and dried) amounted to Rs. 521 million (31,715 tonnes) of which the Japanese intake was valued at Rs. 291 million (15,080 tonnes). Japanese purchases of Indian shrimps increased from Rs. 223.7 million in 1971-72 to the order of Rs. 291 million in the subsequent year. In the first half of 1973-74 (April-September, 1973), frozen shrimp exports to Japan from India have registered a spectacular increase of Rs. 266 million against Rs. 133 million in the same period of 1972-73. In terms of quantity, the export was to the extent of 12,700 tonnes against 5,540 tonnes in the comparable periods.

Recently, the Japanese Government have issued a notification cautioning its citizens to restrict shrimp consumption because the fish caught from Japanese waters were polluted with high mercury content. *The mercury content of Indian shrimp is far below even the minimum standards accepted by the Japanese.* Samples of Indian shrimp drawn from different regions are being tested further at the Bhabha Atomic Research Centre, Trombay for mercury content. It was as early as 1965 that frozen shrimps and canned shrimps were brought under the purview of the compulsory preshipment inspection scheme under Export (Quality Control and Inspection) Act. Since then, other items of seafood exports were also brought under the same system. Under the scheme, it is stipulated that no consignment of seafood would be permitted for export unless it is accompanied by a certificate of export-worthiness from the recognised export inspection agency guaranteeing

CORRECTION Indian exports of frozen or chilled prawns and shrimps during April-December 1972 were 22.5 million kgs. and the quantities exported to Japan and U.S.A. were 10 million kgs. and 10.7 million kgs. and not 2.25 million tonnes, 1 million tonnes and 1.07 million tonnes respectively as wrongly published in the issue dated July 7, 1973 under the caption 'Fish Exports Up'.

its conformity to prescribed standards. Prescribed limits for pathogenic bacteria (E. Coli, Salmonella and Staphylococous) in respect of export of frozen shrimps have been enforced effective from August, 1973.

India's total export trade of marine products which was hardly of the value of Rs. 71 million during 1965-66 rose to as much Rs. 597.20 million during 1972-73. In April-August (1973-74), the exports were of the order of Rs. 330 million.

EXPORT TRADE IN KENDU LEAF

Used for the manufacture of bidis, kendu leaves are exported from India mainly to Sri Lanka, Nepal and Afghanistan. The export quantum of the leaf during 1972-73 was about 40,000 quintals which fetched Rs. 11 miilion in terms of value. The bulk of it – about 22,700 quintals at a value of nearly Rs. 8 million – was supplied to Sri Lanka while Nepal purchased 13,100 quintals at Rs. 2.32 million. Afghan imports totalled Rs. 739,000. U. K. and Canada were also in the list of other importers.

Sri Lanka, the traditional market, had contracted some time back to import 35,000 quintals of kendu leaves from Orissa Forest Corporation for supply during September 1973 to August, 1974. This export order contracted with Sri Lanka accounts for less than 10 per cent of Orissa State's total prodution of the leaves and less than 1 per cent of India's total production estimated at about 400,000 tonnes. In fact, the total export of this commodity during 1972-73 was also about 1 per cent of India's total production.

Apart from Kendu leaf, India exports bidis to a few neighbouring countries, the most important markets being Malaysia and Singapore. During 1962-63, Sri Lanka used to be the biggest single market but the Government of that country imposed restrictions on the import with a view to encouraging the use of local tabacco. During 1972-73, the total value of bidi exports from India amounted to 64,810 kgs. valued to fetch Rs. 1.4 million. Malaysian purchases totalled 37,000 kgs. at Rs. 0.8 million. Singapore was the next important market at an import value of Rs. 0.37 million (13,300 kgs.). Some exports of bidis are also being made to developed countries, such as, Australia, Belgium, Canada, Switzerland and U.S.A.

PROGRESS OF IRON ORE SALES TO JAPAN

The Minerals and Metals Trading Corporation of India have entered into both, long and medium term iron ore sale contracts with Japanese Steel Mills which have been the traditional buyers of the ore from India. Besides these contracts, annual contracts are also entered into with the Japanese Steel Mills in the beginning of each financial year. At the time of finalising the annual contracts, firm quantities against medium and long term contracts are also settled for the current financial year, taking into account the past performance and the future capabilities.

The annual negotiations for 1973-74 were finalised in September 1973. The delay in reaching accord on the prices of the various iron ore grade was due to the fact that a suitable mark up due to successive Dollar devaluations in December 1971 and February 1972 had to be effected.

According to the Agreement now reached for the year 1973-73, a quantity of 713,000 tonnes of high grade iron ore is to be supplied ex-Madras, 187,000 tonnes of high grade ore from Cuddalore and 4.7 million tonnes of Bailadila ore, 3.15 million tonnes of basic grade and 450,000 tonnes of Redi Fines. It is expected that exports of iron ore to Japan during 1973-74 would be more at about 2 million tonnes than in the preceding year.

MMTC's iron ore export target during 1973-74 is 13 million tonnes, out of which the targetted share of Japan is 9.35 million tonnes, 0.81 million tonnes to Czechoslovakia, 0.47 million tonnes to Poland, 0.26

million tonnes to Bulgaria and about 100,000 tonnes each to South Korea, Taiwan and Hungary. In the period April-July 1973, an amount of 3.98 million tonnes has already been shipped, of which the Japanese intake was 2.57 million tonnes.

EXPORT TRADE IN LEATHER, HIDES AND SKINS

India's export of E. I. tanned hides, skins and tanning material earned foreign exchange worth Rs. 521.45 million during the first half of 1973-74 (April-September 1973), registering an increase of Rs. 48.87 million over the export value in the corresponding period of the preceding year at Rs. 472.60 million, according to the Leather Export Promotion Council, Madras.

Sheep skins, cow hides, buffalo calf skins, cow calf skins and buffalo hides were the specific varieties of leather which registered significant increase during April-September 1973. However, goat skins witnessed considerable setback as compared to the export value in the period reviewed of 1972.

Sheep skin exports jumped up to fetch Rs. 194.85 million (2.45 million kgs.) from Rs. 122 million (2.27 million kgs.), while cow hides looked up to Rs. 74 million (3.94 million kgs.) from Rs. 60.76 million (6.19 million kgs.). Buffalo calf skins and cow calf skins constituted two more varieties of sizeable overseas intake which earned Rs. 36.40 million (1.13 million kgs.) and Rs. 25.57 million (3.58 million kgs.) respectively as compared to Rs. 19.32 million (1.26 million kgs.) and Rs. 18.16 million (1.06 million kgs.) in the same period of 1972-73. Buffalo hides too earned more at Rs. 7.29 millon (0.55 million kgs.) as compared to only Rs. 2.7 million (0.29 million kgs.).

Goat skin exports, however, slided down to a level of Rs. 178.10 million (2.58 million kgs.) from Rs. 242.15 million (5.56 million kgs.). Tanned reptile skin exports too came down by about 50 per cent during the first half of 1973-74 as compared to the value in the same period of 1972-73. Its exports were at Rs. 1.54 million (0.44 million kgs.) and Rs. 3.07 million (0.86 million kgs.) in the respective periods.

Goat hair more or less maintained the same level of export as in the corresponding period of the preceding year. The export value in the respective periods was Rs. 3.59 million (1.55 million kgs.) and Rs. 3.51 million (1.80 million kgs.).

BASIC CHEMICALS AND PHARMACEUTICALS EXPORT UP

India's exports of basic chemicals and pharmaceuticals products are estimated to have earned foreign exchange at a value of Rs. 313.37 million during the first half of 1973-74 (April-September 1973) as compared to Rs. 190.22 million in the corresponding period of the preceding year, registering an increase of nearly 67 per cent, according to the Basic Chemicals, Pharmaceuticals and Soaps Export Promotion Council, Bombay.

During April-September 1973, all the categories of exports (Chemicals, Pharmaceuticals and Soaps and Toiletries) registered improvement as compared their export value in the same period of the preceding year.

In the pharmaceutical sector, medicinal castor oil was the major item of export dynamism having improved its offtake manifold having fetched Rs. 122.9 million as compared to only Rs. 3.77 million. U.S.S.R., U.S.A., Japan, U.K., France and Australia were the principal importing countries. Antibiotic preparations too earned more at Rs. 4.57 million as compared to nearly Rs. 1 million. Tanzania, Philippines, U.S.A., South Korea and Libya were the leading buying countries. Absorbant sterile cotton which improved its offtake to Rs. 7 million from Rs. 2 million, registered more than three-fold increase and was mainly bought by Thailand, Bangladesh, Poland, Malavi and Zambia. Antidiabetic drugs too constituted the major area of sizeable overseas intake during the period under review of 1973-74. The exports rose sharply to Rs. 3.49 million from a meagre amount of Rs. 0.52 million. Australia and German Federal Republic were the leading markets for these drugs.

In the chemicals sector, organic dyestuff pigment, Carbon black, hydrochloric acid, zinc compounds (hydrochloride) and catalyst chemicals were supplied overseas and all these items improved their offtake sizeably as compared to that in April-September 1972. For instance, hydrochloric acid exports improved to Rs. 7.28 million from Rs. 5.57 million; carbon black to Rs. 2.91 million from Rs. 1.77 million; organic dyestuff pigment to Rs. 140 million from Rs. 107 million and catalyst chemicals to Rs. 1.28 million from only Rs. 1200. Saudi Arabia and Dubai were the leading destinations for hydrochloric acid while Kenya, Tanzania Republic, Thailand and Sri Lanka were the significant markets for carbon black. Organic dyestuff pigment was bought by a number of countries among which Hong Kong, Sri Lanka, U.S.A. and Federal Republic of Germany were significant. Kuwait was the largest single buyer for catalyst chemicals.

A side from the above chemicals, zinc compounds (hydroxide) and benzidine Di-hydrochloride, which were not at all exported during April-September 1972, figured in exports during April-September 1973. Among them, zinc compounds brought in sizeable foreign exchange equivalent to nearly Rs. 4 million while Benzidine Di-hydrochloride earned a moderate sum of Rs. 730,000. The former item was mainly imported by Congo while the latter was bought by Belgium and Bulgaria.

In the soaps and toiletries sector, items like synthetic detergents, lemongrass oil, senna leaves and pods and toothpaste were supplied overseas. Among these, synthethic detergents constituted the major product of large overseas offtake. As compared to the export value in the same period of 1972-73 at Rs. 3.75 million, the exports more than doubled to fetch a value of Rs. 8.80 million during the same period of 1973-74 and U.S.S.R. was the largest single buying country. Lemongrass oil was the next best item which was mainly bought by U.K., U.S.S.R., U.S.A. and Netherlands at a cost of Rs. 4.75 million. In the preceding year, (April-September 1972), the exports were at Rs. 3.70 million. Senna leaves and pods which secured Rs. 4.71 million against Rs. 3.17 million were purchased by Japan, Hungary and Federal Republic of Germany. Toothpaste exports too registered sharp increase to fetch Rs. 1.30 million against Rs. 763,600. Czechoslovakia, Hungary, Bangladesh and U.S.S.R. were the leading markets.

Interestingly, the overall export target set up by the Basic Chemicals, Pharmaceuticals and Soaps Export Promotion Council, Bombay for the first half of 1973-74 at Rs. 250.50 million was confidently achieved by a sharp margin with an estimated export performance during this period to the tune of Rs. 313.37 million. The increase in the exports over the targetted figure was of the order of over 25 per cent.

The Council has placed the target for the entire year of 1973-74 at Rs. 501 million.

GEM AND JEWELLERY EXPORTS SECURE MORE FOREIGN EXCHANGE

Improving the export uptrend in recent years, India's gem and jewellery industry has stepped forward further in the first five months of 1973-74 (April-August 1973). The export value fetched was as much as Rs. 361.60 million (April-August, 1973) as compared to Rs. 262 million (April-August, 1972).

During 1972-73, India's total exports of gem and jewellery secured foreign exchange at a value of Rs. 779.30 million, registering over 50 per cent increase over the preceding year's value at Rs. 515 15 million.

Diamond continued to be the largest single foreign exchange earning item which secured nearly Rs. 296.95 million (April-August, 1973) as compared to Rs. 216.77 million (April-August, 1972), registering 37 per cent increase over the exports in the comparable period of the preceding year.

Precious and semi-precious stones was the next best area of export dynamism which brought in Rs. 53.90 million. The export earning improved sharply by 52 per cent over the export value in the corresponding period at Rs. 35.40 million.

Imitation jewellery exports too rose sizeably during the period under review of 1973-74 to fetch Rs. 6.25 million as against Rs. 2.44 million while gold jewellery exports improved marginally to a level of Rs. 2.31 million against Rs. 2.19 million.

The export earning of pearls and synthetic stones, however, looked down during April-August 1973 as compared to that in the same period of 1972. The export value of pearls came down to Rs. 2.12 million from Rs. 5 million while that of synthetic stones reduced to a level of Rs. 71,000 from Rs. 227,000.

Of the total export earning during 1972-73, diamonds alone netted the bulk of foreign exchange at a value of Rs. 625.25 million. Belgium was the principal importing country, followed by U.S.A., Hong Kong, Japan, Netherlands, U.K., Singapore, France, Switzerland, Australia, Lebanon and Federal Republic of Germany.

Pearls earned Rs. 10.40 million while synthetic reconstituted precious and semi-precious stones were supplied overseas to fetch Rs. 6.80 million. U.S.A., Hong Kong, Dubai, Japan and France were the prominent customers for pearls while Switzerland and France were the leading destinations for synthetic precious and semi-precious stones.

Other precious and semi-precious stones which included natural semi-precious stones, natural precious stones (cut), natural precious and semi-precious stones (uncut) and emeralds (uncut) together netted Rs. 136.86 million. Federal Republic of Germany, Switzerland, U.S.A., France, Hong Kong, Japan, Belgium and Singapore were the principal importing countries.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

INDIAN ECONOMY

SOME BASIC FACTS

India's gross national product was of the order of Rs. 363,190 million at current prices during 1970-71 and Rs. 201,660 million in the same year at 1960-61 prices. The net national product at current prices was Rs. 342,530 million and Rs. 188,760 million at 1960-61 prices in that year. The per capita net national product was Rs. 663 at current prices and Rs. 349 at 1960-61 prices (in 1970-71). The percentage share of agriculture in net domestic product was 50 while that of mining, manufacturing, electricity, gas and water supply was 20 per cent and other sectors 30 per cent in 1970-71.

With 1960 as the base year, the general index of industrial production improved from 181 in 1970-71 to 186 in 1971-72 and 199 in 1972-73. The production trends of some of the industrial sectors were as follows: for ammonium sulphate ('N' content) the output increased from 77,000 tonnes in 1960-61 to 126,000 tonnes in 1970-71 but registered a decline to the level of 118,000 tonnes in 1972-73. Production of coal in these years increased from 52.6 million tonnes to 76.8 million tonnes and 77.8 million tonnes. Petroleum refinery products grew in their output from 5.7 million tonnes to 17.2 million tonnes and 18.2 million tonnes. Cement production was up from 7.8 million tonnes to 14 million tonnes and 15.8 million tonnes. Pig iron and ferro-alloys rose from 4.3 million tonnes to 7.2 million tonnes and 7.4 million tonnes. Finished steel production was 2.2 million tonnes and 4.8 million tonnes and 4.9 million tonnes in the respective years. The turnover of diesel engines was 53,000 numbers in 1960-61, 69,000 numbers in 1970-71 and 74,000 numbers in 1972-73. Motor vehicles production was up from 52,000 numbers to 98 000 numbers but came down to 90,000 numbers in 1972-73. The electricity generated was 17,160 million kwh. in 1960-61, 55,894 million kwh. in 1970-71 and 64,012 million kwh. in 1972-73.

The index number of agricultural production improved from 103 (1961-62=100) in 1960-61 to 132 in 1970-71 and 129 in 1971-72. Foodgrains production in these years was of the order of 82 million tonnes, 108 million tonnes and 105 million tonnes respectively. The production of rice was 35 million tonnes, 42 million tonnes and 43 million tonnes; of wheat 11 million tonnes, 29 million tonnes and 26 million tonnes and of pulses 13 million tonnes, 12 million tonnes and 11 million tonnes. In terms of gur, sugarcane production was 11.1 million tonnes; 13 million tonnes and 11.7 million tonnes. The production of oilseeds went up from 8.8 million tonnes to 10.7 million tonnes and 11 million tonnes. In terms of million bales of 108 kg./each, the output of cotton (lint) was of the order of 5.3 million, 4.5 million and 6.5 million bales in the respective years. Jute output rose from 4.1 million bales to 4.9 million bales and 5.7 million bales.

In the field of trade, the export quantum index with 1958 as the base year increased from 100 in 1960-61 to 153 in 1970-71 and 151 in 1971-72. The export unit value index increased from 110 to 173 and 180. The import quantum index which was 128 in 1960-61 came down to 127 in 1970-71 but went up to 139 in 1971-72. The import unit value index, however, rose consistently from 96 to 147 and 149. In these three years thus the net terms of trade were 115, 118 and 121. The total value of exports increased from Rs. 96,420 million in 1960-61, Rs. 15,350 million in 1970-71, Rs. 16,070 million in 1971-72 and Rs. 19,620 million in 1972-73. The share of major export commodities was as follows in the years 1960-61, 1970-71, 1971-72 and 1972-73: tea Rs. 1230 million, Rs. 1450 million, Rs. 1550 million and Rs. 1450 million; jute manufactures Rs. 1340 million, Rs. 1900 million, Rs. 2650 million and Rs. 2500 million; cotton textiles Rs. 580 million, Rs. 970 million, Rs. 1000 million and Rs. 1270 million; metalliferous ores Rs. 390 million, Rs. 1420 million, Rs. 1210 million and Rs. 1216 million; leather and leather manufactures Rs. 250 million, Rs. 720 million, Rs. 910 million and Rs. 1720 million.

The import bill in the above four years was of the order of Rs. 11,220 million, Rs. 16,340 million, Rs. 18,250 million and Rs. 17,770 million. The import bill on account of cereals and cereal preparations was Rs. 1810 million, Rs. 2030 million, Rs. 1310 million and Rs. 810 million. Chemical imports were Rs. 860 million, Rs. 1920 million, Rs. 2180 million and Rs. 2480 million. Import trade in machinery and transport equipment also increased substantially from Rs. 3330 million to Rs. 3950 million, Rs. 4710 million and Rs. 4960 million. Overseas purchases of mineral oils (petroleum and petroleum products) increased from Rs. 690 million to Rs. 1360 million, Rs. 1940 million and Rs. 2040 million.

Foreign exchange reserves were only of the value of Rs. 3040 million in 1960-61. Their value increased to Rs. 7320 million in 1970-71 and Rs. 8470 million in 1972-73. Gold reserves were of the order of Rs. 1180 million in 1960-61 but remained at Rs. 1830 million since 1970-71. The amount of Special Drawing Rights to India's credit totalled Rs. 1120 million in 1970-71, Rs. 1860 million in 1971-72 and Rs. 1850 million in 1972-73. Apart from the foreign exchange reserves, the foreign exchange available with the country was of the order of Rs. 1860 million in 1960-61, Rs. 4380 million in 1970-71, Rs. 4800 million in 1971-72 and Rs. 4790 million in the subsequent year.

The index number of wholesale prices for all commodities was 181 in 1970-71 (1961-62=100), 188 in 1971-72 and 207 in 1972-73. India's total population was 439.10 million in 1961 and 547.90 million in 1971. Of this, urban population in the respective years was 78.9 million and 109.10 million. Rural population totalled 360.2 million and 438.8 million respectively.

The percentage of literacy (including 0-4 age group) was 24 in 1961 and 29.5 in 1971. The literacy percentage for males was 34.4 and 39.4 and that for females was 13 and 18.7 respectively.

By the end of the Third Five–Year Plan (1965-66), the total external assistance received by India was of the order of Rs. 57,930 million (authorised). Of this, assistance worth Rs 44,990 million was actually utilised. By the end of 1968-69, the total external assistance received was Rs. 88,140 million (post–devaluation rate) and the assistance utilised was worth Rs. 76,460 million. The percentage of repayment and servicing to exports was as much as 29.3 in 1970-71 and 28.7 in 1971-72. The Fourth Plan (1969-74) provision for public sector outlay totalled Rs. 165,870 million. Of this, the outlay on agriculture and community development was Rs. 29,150 million, on irrigation and power Rs. 38,150 million, on industry and mining Rs. 35,430 million, on transport and communications Rs. 30,630 million and social services and miscellaneous items Rs. 32,510 million.

The above facts are contained in a leaflet entitled 'Indian Economy and Some Basic Statistics' brought out by the Reserve Bank of India recently.

INDIA WELCOMES FOREIGN INVESTMENT

In a recent interview with the New York Times, India's Minister for Industrial Development, Mr. C. Subramaniam stated that India continues to be very much interested in foreign investment and had eliminated the long delays that were common in obtaining investment approvals from the Government of India. Referring to the pattern of American investment, the Minister stated that total investment from U.S.A in India was of the order of about $ 350 million. Indian authorities approved 43 Indo-U.S. joint ventures during 1971 which increased to 62 in 1972. In the last year and a half, American Companies committed themselves to invest about $ 20 million in equities in joint ventures, the Minister stated.

A new machinery for the clearance of industrial licences has come into operation from November 1, this year which would ensure that applications for industrial licences are cleared within 90 days in normal cases and within 150 days in cases requiring references to the Monopoly Commission of India.

Foreign investment is welcomed by India in fields where technology is needed. The Government of India normally allows minority participation to the foreign investors up to 40 per cent. Equity investment above 40 per cent can also be considered, however, in cases involving substantial exports (60 per cent or more of production).

LICENSING PROCEDURE STREAMLINED

The Government of India have considerably streamlined the system for the issue of industrial licences effective from November 1, 1973, in respect of applications made on or after that date. The essential objective of the new system is to issue clearance within the defined time targets. Letters of intent, foreign collaboration approvals and capital goods clearances are proposed to be issued within 90 days of receipt of the applications in each case. In cases which require examination under the Monopoly and Restricted Trade Practices (MRTP) Act 1969, it is proposed to give clearance within 150 days. In cases where entrepreneurs present composite applications for industrial licences for foreign collaboration approval and capital goods clearances, the time target will be 120 days.

The implementation of the new system of industrial approval has been placed under the overall supervision of an inter-ministerial committee of secretaries, namely, the Project Approval Board. The existing approval committees, such as, Licensing Committee, Foreign Investment Board and the Capital Goods Committee are to function as committees of the Project Approval Board.

At present, the initial validity period of letters of intent is normally six months. But this time limit is extended to 12 months now. In case where neither foreign collaboration approval nor capital goods clearance is involved, an industrial licence will be issued at the initial stage itself instead of a letter of intent. In cases where one of the clearances either for foreign collaboration or capital goods is necessary, a further extension of six months to the initial validity of the letter of intent might be considered. In cases where both foreign collaboration and capital goods clearances are involved, two extensions of six months each beyond the initial validity periods of 12 months might be considered. Extensions of letters of intent beyond a total period of 24 months will in no event be entertained.

Presently, there is considerable delay in converting valid letters of intent into industrial licences. In the new system, the letters of intent would be automatically converted into industrial licences when the final clearance required is obtained.

BAR MILL OF ORDNANCE FACTORY MODERNISED

"A revamping programme is even more complicated and intricate than establishment of an altogether new mill". The Heavy Electricals of India Limited, Bhopal, have recently completed the modernisation assignment of the 710 mm (28") Bar Mill of the Ishapur Ordnance factories. With the revamping of the mill which was set up in 1940 with equipment from U.K., the annual output capacity of the mill is expected to be doubled.

Falling in the line for supply of electrics for Steel and Aluminium Rolling Mills, the Bhopal Factory has successfully completed the revamping jobs, having supplied equipment, such as, a 1,875 Kw dc motor, a motor generator set comprising a 2,250 Kw ac synchronous motor and a 2,040 Kw dc shunt generator and so on. The order represents a composite contract for the design, manufacture and supply of complete electrics.

Indeed, this was for the first time that such a modernisation programme was carried out entirely indigenously.

The Bhopal Factory has also recently received export orders for the supply of 50 numbers of 11 Kv Oil Circuit breakers from Bangladesh Power Development Board and for the supply of spares for 11 Kv Oil Circuit breakers and Oil Switches from Malaysia and Iraq. At the request of the Indian Railways, the Heavy Electricals Limited would allow the use of its traction motors on the 25 Kv ac 50 cycle locomotive being manufactured by Chittaranjan Locomotive Works. These locomotives had so far, been equipped only with French designed traction motors. The Railways have reported that the initial locomotives fitted with Bhopal factory's traction motors have been operating satisfactorily for the past one year.

SELF-RELIANCE IN SHIP BUILDING

India is to attain a large measure of self-reliance in the requirements of ships by the end of the Sixth Plan (1979-80 to 1983-84). The programme of ship building during the Fifth Plan (1974-75 to 1978-79) contemplates the maximum expansion of the shipyards at Visakhapatnam, Cochin, Mazagon Docks and Garden Reach Workshops. This would lead to a total capacity of 4,75,000 GRT.

In addition, it is proposed to take up construction of at least two new shipyards during the Fifth Plan period. Preliminary studies regarding selection of a suitable site, keeping in view the size of tankers and bulk carriers to be constructed, is underway. A Techno-Economic Group appointed by the Ministry of Shipping and Transport, has already visited a number of locations in various maritime States. The Team is expected to forward its report by the end of the current month.

Meanwhile, reports are being received from various countries giving details of the terms and conditions of collaboration in ship building.

An amount of Rs. 1600 million is expected to be spent in the setting up and expansion of the Cochin Shipyard and the expansion of the Hindustan Shipyard Limited. Funds have also been provided for subsidising shipbuilding ancillaries, initial expenditure on new shipbuilding yards and for making a beginning in the setting up of a Central Marine and Design Research Organisation.

For promoting self-reliance in design of ships, the Central Maritime Design and Research Organisation will also be set up during the Fifth Plan. A team of experts has already visited a number of countries to study their maritime design organisations. The team, which has already given its report, has recommended the setting up of a design and research centre at a capital cost of Rs. 200 million.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

ZINC CHROMATE PRIMERS

The Central Electro-Chemical Research Institute (CECRI), Karaikudi (Tamil Nadu), has developed a process for the preparation of zinc chromate primers which can be used on all types of steel structures as well as structures consisting of both, ferrous and non-ferrous parts, such as, bridges, towers, tanks, sheds, poles, bus bodies and aircraft parts.

In the process developed by CECRI, zinc chromate pigment to Indian Standard 51, is mixed with a suitable vehicle in porcelain mixing jar and a small amount of solvent is added and ½" diameter iron balls are then introduced and ground till the Heghman scale reading comes to 5–6. Then the balls are removed and remaining quantities of solvent and vehicle added to adjust the consistency of the paint.

At present, zinc chromate primers are not used in the country for steel structures. Other primers, such as, red-oxide, red lead, red oxide zinc chromate are being used for this purpose. The annual consumption of zinc chromate primers is estimated at 10,000 tonnes.

Five litres of the paint have been prepared using rotating jar mill, in each batch. Forty litres of the product have so far been produced.

Field trials have been carried out at the exposure yards situated in Karaikudi, Mandapam Camp, Mangalore and Madras harbours and the better performance over the presently used primers was established for a period of two years.

The main raw materials required for the preparation of the product are zinc chromate and suitable vehicles. All these are indigenously available.

The main items of plant and machinery required are ball mill, three roller mill with jar, Heghman gauge, stormer viscometer and other testing equipment, stainless steel vessels and mixing tanks.

KNOW-HOW FOR FABRICATION OF DISTILLATION APPARATUS

National Physical Laboratory (NPL), Hillside Road, New Delhi, has successfully developed know–how for fabrication of the distillation apparatus which is used for the preparation of distilled water required for medical and research purposes.

The distillation apparatus which is not easily damageable, can be easily handled even by untrained persons. It can be used wherever electrical supply is available. The heating element is embedded in a glass tube, coil or U-tube. NPL has already fabricated and sold several numbers of this apparatus. The units supplied by NPL are considered to be the best in the market.

Annual demand for distillation apparatus is estimated at 2,000 units. At present, it is being met partly through imports.

The main items of raw materials required for the fabrication of the distillation apparatus are heat resistent borosilicate glass, nichrome wire and porcelain beads. The major items of equipment required are medium size glass working lathe with all accessories, chucks, burners handtools. coil winding machine, glass working table, blast burner and air oven.

PROGRESS OF OCEANOGRAPHIC RESEARCH IN INDIA

While the Pacific, Atlantic, Arctic and Antarctic are being explored for quite some time, the efforts made in the Indian ocean are comparatively of very recent origin. Before the augury of International Indian Ocean Expedition, oceanographic studies in the Indian ocean were limited to a few selected aspects. The Expedition (1960-65) was conducted through the cooperation of the international community. Guided by the Indian National Committee on oceanic research, the Indian participation under the auspices of the Expedition was effected only since 1962. During 1962-1965, the naval frigate carried out 29 cruises over 42,000 nautical miles covering 764 stations in the Indian ocean. Indian participation in the Expedition enabled her to collect large amount of data. One of the greatest achievements of the Expedition was the discovery of bottom features, such as, ridges, sea mounts and abyssal plains.

On the conclusion of the Expedition, the vast material and oceanographic data and well trained personnel available, offered a solid foundation for the establishment of the National Institute of Oceanography (January 1966). Since then, the Institute has been engaged in studies making the best possible use of the data acquired during the Expedition. The Institute is the single organisation among all the countries touching Indian ocean, devoted to integrated oceanographic research of this third biggest ocean. The Institute operates from the headquarters in Panaji (Goa) with its regional centres in Cochin and Bombay.

Besides devoting to the problems of coastal oceanography, the Institute undertook several programmes to deal with the various aspects of marine research. It helped the Indo-Norwegian project in the construction of a break-water for fishing near Cannanore. At the request of Bombay Municipal Corporation, the Institute also conducted hydrographic survey in the waters off Bombay to locate the sites for laying sewage pipelines in the sea. A project on the bathemetric and hydrographic survey of the sea off Tarapur has been recently undertaken at the request of Tarapur Atomic Power Station. The results are to help selection of suitable sites for the disposal of the affluents from the Atomic Power Station into the sea off Tarapur to avoid pollution of the coastal zone from atomic wastes. The Institute is also giving attention to the problem of pollution of the coastal waters. An extensive study on pollution, caused by a tar-like material deposited on the beaches of Indian coasts, was undertaken with a view to understanding the extents, intensity and possible causes of this pollution in various areas over the Indian coastline. In Goa, the Institute is monitoring the marine and estuarine environments in the areas of discharge of factory affluents from CIBA of India and Zuari Agro Chemicals. A project on the fishery potential of Goa has been completed recently, the findings highlight the fishery resources of the water along the coast of Goa.

The prospects of oceanographic research in India are bright due to its application in naval defence, marine transportation and communication, protection of the coasts, food and mineral wealth. The seas round India are rich in food and mineral resources. The National Institute of Oceanography has capable and experienced scientists to explore these resources and they are engaged in this work.

CEMENT INDUSTRY

A SPOTLIGHT

Cement industry in India has more than 50 units in its infra-structure. Although cement manufacturing plants are scattered all over the country, the majority of the units are located in Southern and Western parts of the country, accounting for nearly 70 per cent of the total production. The industry was able to reach the output of near installed capacity during the last two decades. During 1951, the installed capacity was of the order of 3.5 million tonnes while the actual output was of the order of 3.2 million tonnes, accounting for about 90 per cent capacity utilisation. The year 1954 witnessed the industry achieving almost 100 per cent capacity utilisation. As against the installed capacity of 4.45 million tonnes, the actual production was as much as 4.40 million tonnes. The level of production, however, in the later years, indicated marginally declining trend ranging between 80 to 90 per cent of the installed capacity. During 1960, 1965 and 1970, the figures of installed capacity were 8.71 million tonnes, 11.70 million tonnes and 17.36 million tonnes while actual production was respectively 7.84 million tonnes, 10.6 million tonnes and over 14 million tonnes. During 1972, the production was estimated at 15.7 million tonnes against the installed capacity of 19.75 million tonnes, achieving 80 per cent of the capacity installed.

The industry manufactures quite a few varieties of cement, the prominent among which are portland grey, portland white, hydraulic cement and asbestos cement. Besides, a number of cement products catering to the requirement of modern construction, such as, AC Sheet, ACC production, AC building pipes, ACP pipes, asbestos cement pipes/sheets/tiles, roofing sheets, pressure pipes and other articles are also produced.

The rapid process of industrialisation, coupled with the general increase in the standard of living achieved during the various plan periods gave rise to domestic consumption of cement. Domestic demand by the end of the Fifth Five-Year Plan (1978-79) has been estimated by the Planning Commission at 28 million tonnes at the rate of 8 per cent per annum. Estimating 85 per cent capacity utilisation, the total installed capacity has been assessed at 33 million tonnes by the end of the Fifth Plan. To bridge the gap between the current capacity and estimated capacity by 1978-79, an additional capacity to the tune of 13 million tonnes is required to be set up during the Fifth Plan period.

Today, there are 6 large scale units engaged in cement manufacture in the private sector which account for more than 80 per cent of the total installed capacity. In the public sector, M/s. Cement Corporation of India (CCI) entered into the field of cement manufacture in 1965 to undertake multiferous responsibilities. The Corporation is entrusted to set up cement plants in the public sector as also to explore the possibility of finding limestone deposits in the country. Besides, it has also to work as a co-ordinating agency in respect of all ancillary activities which aim at growth of the industry. The country's first public sector cement plant was set up in Madhya Pradesh at Mandhar in 1970 with an installed capacity of 200,000 tonnes per annum. Since then, the Corporation set up a chain of plants in the public sector. Various State Industrial Development Corporations too took initiative in establishing cement plants in their respective States. Today, the total installed capacity in the public sector stands at little over 2.3 million tonnes. For 1973-74, the domestic demand for cement is estimated at 24 million tonnes and steps are being taken for creation of additional capacity of nearly 9 million tonnes (including private and public sectors). Of this, 3.6 million tonnes worth of capacity is to be in the public sector. The Government have already issued licences and letters of intent in this respect.

The raw material mix required by the industry mainly includes limestone, clay, laterite, gypsum and coal. All these are available indigenously.

The cement industry which till recent times depended on foreign equipment and technical know-how has gradually built up self-sufficiency. With a view to meet the expected increase in domestic demand for cement in the coming years, facilities for increased production are being developed within the country itself. Fortunately, the country is self-reliant in respect of technology and equipment required for the increased production. In fact, in this line of manufacture (machinery), import of technology is completely banned. Capacity has been generated in the country for the manufacture of complete plant and equipment for AC sheets, pipes and pressure pipes. India today is in a unique position to export finished products, complete plant and machinery to manufacture these and technology to run these units. For instance, M/s. Cement Corporation of India have entered into a collaboration agreement with Bhutan to set up a cement plant in that country with a production capacity of 100,000 tonnes per annum.

As on December 1971, there was one unit engaged in the manufacture of asbestos cement machinery with an installed capacity worth Rs. 28 million. The installed capacity in the cement mill machinery sector was of the order of Rs. 260 million.

The country produces complete plants, both wet and dry processes, the capacity ranging between 300 to 1000 TPD. The import content in a complete plant of 600 TPD currently is of the order of Rs. 1.2 million for wet process while it is Rs. 1.9 million for dry process. The cement industry has also a capacity for manufacturing shaft kiln plants in a range between 30 to 200 TPD. Apart from these, limestone crushers, grinding mills, rotary kiln and coolers and packing machines are also on the industry's production stream.

Alongside the progress in production, the industry is equally active in the field of exports too. India's exports of cement during 1972-73 secured foreign exchange at a value of Rs. 50.35 million which registered significant increase over the export value in 1971-72 at Rs. 28 million. In 1970-71, the exports were of the order of Rs. 26 million.

During 1972-73, portland grey cement constituted the largest single variety which earned Rs. 50.10 million (0.31 million tonnes) while in 1971-72, its export value was Rs. 24.84 million (0.19 million tonnes). Bangladesh emerged as the principal importing country during 1972-73, having purchased nearly 0.21 million tonnes valued at Rs. 35.77 million. In 1971-72, Nepal was the leading buyer, having bought 77,700 tonnes at a cost of Rs. 11.15 million. However, during 1972-73, its purchases were 76,350 tonnes at a value of Rs. 11.30 million, slightly more than that in the preceding year in terms of value. Muscat, Qatar, Dubai, Kuwait and Maldive Islands were among other buyers.

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Hydraulic cement and portland white, the other two varieties exported during 1972-73, were mainly bought by Iran, Muscat and Arab Republic of Egypt.

Besides cement, building materials of asbestos cement too figured in exports during 1972-73. The export range included asbestos cement pipes, sheets, tiles and other articles of asebstos cement and these brought in foreign exchange equivalent to Rs. 5 million. Tanzania Republic, Dubai, Bahrein Islands, Abu Dhabi, Nepal, Sudan, South Yemen Peoples Republic and Muscat were the prominent destinations.

Exports of cement are canalised through the State Trading Corporation of India (STC). The Corporation recently bagged a sizeable export contract for supply of 15,000 tonnes of cement to Nepal valued at Rs. 2.5 million against free currency. The supply of cement is being made to meet the requirements of some UNDP aided projects in that country. During 1972-73, STC's total exports of cement are estimated to be of the order of 300,000 tonnes as against 235,000 tonnes in 1971-72. Kuwait too, sought Indian assistance for a turnkey cement project in that country. The development of technical expertise has enabled the industry to export technology and plants of its own designs in other countries.

The recent trend in the cement manufacture indicates that the production of ordinary portland cement should be supplemented by increasing the output of pozzolana masonry and slag cement ensuring full utilisation of the annual granulated slag and other industrial wastes. With a view to ensure constant supply of limestone to the industry, intensive and extensive surveys are proposed to be carried out and fine and rejected limestones in steel plants are to be used by blendings with steel grade limestone. ☐

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INDO-IRANIAN COLLABORATION PROJECT

A joint industrial venture in Iran with the assistance of M/s. Atlas Cycle Industries Limited, Sonepat (Haryana) have recorded progress. The Iranian company which entered into an agreement with the Indian firm some time back for a 10 year collaboration with the latter's technical aid has already achieved self-sufficiency in the production of bicycle frames, handle forks and mudguards. Besides, a press shop, a machine shop, a brazing shop, a chemical cleaning shop and a painting shop have been set up and these shops are now working in full swing. Work has already started on painting and electro-plating of components. The Iranian company is also gearing itself to undertake the manufacture of handle fittings and B.B. shells in the second phase of its production schedule.

M/s. Atlas Company have also entered into an agreement with Tanzania for the manufacture of bicycles with their technical assistance. The proposed bicycle company in Tanzania is expected to start production by mid-1974 and would operate on two shifts with a capacity sufficient to cater to the entire Tanzanian market in bicycles and spare parts.

From hardly 3440 bicycles supplied overseas in 1959, the number of complete bicycles exported by India during 1972-73 was 211,580. The foreign exchange earned was worth Rs. 25.8 million as against Rs. 18.4 million in the preceding year. If the total export picture of bicycle parts is taken into account, the upward trend in Indian supplies becomes more obvious. During the year 1972-73, these fetched Rs. 105.5 million as compared to Rs. 80.4 million in the year before.

Apart from the West Asian and African markets where the Indian bicycles have already established themselves, they have started making dents into the markets of the U.S.A., U.K., Canada and some of the East European countries.

GRAMOPHONE RECORDS TO WORLD MARKETS

The rising export graph of M/s. Gramophone Company of India Limited, 33, Jessore Road, Dum Dum, Calcutta, indicates the popularity of Indian records abroad. During the year ending June 1973, the firm's exports of gramophone records and record playing equipment earned foreign exchange at a value of Rs. 6.40 million as compared to Rs. 5.20 million in the preceding year. The records manufactured by the firm are in wide demand abroad, in particular, in the West Asian, East African and European countries.

The export range of the firm's gramophone records covers a variety of Indian music like folk music, classical music and motion picture songs. Only recently, the firm has developed a new range of record playing equipment with a view to meet the exacting demand of overseas buyers. Its records are released under the brand name 'HMV' (His Master's Voice). Commencing production of gramophones and gramophone records way back in 1907, the firm grew rapidly over the years to undertake manufacture of sophisticated products in the line, such as, radio receivers, radiograms, record players, record producers, pick-up cartridges and a variety of components.

In the preceding year, the Calcutta firm produced 6.78 million gramophone records, 28,531 radio/radiograms and 56,348 record players and record reproducers. Apart from this, it has been lately granted an industrial licence by the Government of India to manufacture 0.35 million numbers of pick-up cartridges and 0.30 million numbers of stylus per year.

India-manufactured records are purchased by about four dozen countries every year. During 1972-73, the foreign exchange earning from overseas supply of these fetched Rs. 5.65 million as against Rs. 5.06 million in 1971-72. In terms of quantity, 0.75 million records as against 0.78 million records were supplied abroad in the respective years.

Destination-wise, U.K. was the largest buyer which imported 0.16 million records at a value of Rs. 1.18 million during 1972-73 while in the preceding year Singapore was the leading importer having purchased 0.14 million records at a cost of Rs. 0.87 million. Czechoslovakia, Singapore, U.S.A., Trinidad, Yugoslavia and Hungary were prominent among other buyers while in 1971-72, U.K., U.S.A., Yugoslavia, Kenya, Guyana and Fiji Islands were the significant destinations.

India's total foreign exchange earning from musical instruments, phonographs, taperecorders, and other sound recorders and reproducers during 1972-73 totalled Rs. 7.60 million which was higher than that in the preceding year at Rs. 6.75 million.

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The export range included gramophone records, sound recorders and reproducers (excluding cinematographic), gramophone parts, tape recorders, their parts and accessories, recorded tapes, pianos, string musical instruments, musical instrument strings, harmoniums, pipe and reed organs, wind musical instruments, percussion musical instruments, electrical musical instruments and other musical instruments. U.K., Czechoslovakia, Singapore, U.S.A., Trinidad, Yugoslavia, Dubai, Fiji Islands, Guyana, Hungary, Kenya, Mauritius, Federal Republic of Germany, Canary Islands, Nepal and Afghanistan were the principal markets.

RISING OVERSEAS DEMAND FOR WIRES AND CABLES

India's wire and cables industry secures foreign exchange in growing volume every year. During 1972-73, the industry's export trade reached an all time high level to fetch foreign exchange at as much as Rs. 126 million. In the preceding year, the exports were valued at Rs. 112.50 million.

The industry offers a variety of cables and wires to world markets. Among these, insulated cables and wires and power aluminium conductors (ACSR) are sought overseas in large quantity. U. S. S. R., Iran, Sri Lanka, Qatar, Federal Republic of Germany, Arab Republic of Egypt, Sudan, Tanzania Republic, Kuwait, Australia, Singapore, Hong Kong and Thailand are the principal markets.

M/s. Universal Cables Limited, 15, India Exchange Place, Calcutta, has secured export orders to the tune of Rs. 7.40 million during 1972-73. The exports during the year were the highest effected by the firm so far.

The firm's manufacturing range covers wires and cables of many varieties including ACSR and all aluminium and copper conductors and apparatus. It also manufactures paper insulated lead covered power cables and capacitors. It produced 4,255 kilometres of cables and wires, 1426 tonnes of ACC/ACSR, 5941 tonnes of aluminium rods, over 1 million pieces of capacitors and 86,876 pieces of KUAR capacitors in 1972-73.

In India's organised sector, the wires and cables industry's production was of the order of Rs. 1696 million in 1972 which was higher as compared to that in 1971 at Rs. 1434 million. The range of production broadly covers insulated wires and cables, bare copper conductors, aluminium conductors, steel reinforced (ACSR and ACC conductors), VIR/PVC cables and PILC and PVC power cables including special cables.

COSMETICS AND EXPORT TRADE

Foreign exchange equivalent to Rs. 42 million was earned by India during 1972-73 from the export of perfumery, cosmetics, dentifrices and other toilet preparations (excluding soaps). The exports rose to this level from only Rs. 20 million in 1969-70, Rs. 24 million in 1970-71 and Rs. 32 million in 1971-72.

Of the total export realisation during 1972-73, agarbattis, the major foreign exchange earner netted Rs. 15.85 million. U.S.A., Nigeria, Ethiopia and Singapore were the leading destinations. Face powder, the next important cosmetic item earned Rs. 11.92 million. U. S. S. R. was the largest single buyer, accounting for the bulk of purchases.

Among other cosmetics, perfumes (not containing spirit) secured Rs. 2.48 million, tooth paste Rs. 1.63 million and shaving creams Rs. 1.07 million. Brilliantines, face cream, hair cream, hair shampoos (spiritous and non-spiritous), tooth powder, toilet powders, hair dyes, spiritous toilet preparations, cosmetic toilet preparations and perfumes containing spirit were also supplied abroad during the year.

Adding to the export endeavour of the perfumes and cosmetics industry, M/s. Lakme, Bombay, exported a variety of cosmetics to the markets in United

Kingdom, Western Europe, U.S.S.R., East Europe, West Asia, Africa and Fiji Islands to fetch Rs. 2.08 million in 1972-73. Jointly with M/s. Tata Exports, the firm exports lipsticks to a number of markets abroad including the sophisticated ones like the U.S.A.

India's cosmetics manufacturing sector has built up a sound base to undertake production of a variety of cosmetic items. In the organised sector, during 1971, the installed capacity worth 1059 tonnes for tooth powder was spread over among 5 units in the line and their combined production was estimated at Rs. 7 million. In tooth paste production, 8 units with an installed capacity of 4051 tonnes produced worth Rs. 79 million while the capacity of 6428 tonnes for talcum and face powders was shared by 28 units and their production was estimated at Rs. 25 million. Fourteen units with an installed capacity of 1132 tonnes manufactured face powder at a cost estimated at Rs. 22.20 million.

AGARBATTIS EXPORTS FETCH MORE

M/s. Mysore Sugandhi Dhoop Factory Private Limited, Commercial Chambers, Post Box No. 3178, Bombay, an established agarbatti (incense-sticks) manufacturing firm stepped up its exports to the tune of Rs. 2.5 million in 1972-73 from Rs. 2 million in 1971-72 and only Rs. 1.2 million in 1970-71. The agarbatti variety exported by the firm ranges from traditional rose, sandalwood and jasmine to fruity lemon and strawberry.

The firm's export destinations include as many as 56 countries and they are consistently endeavouring to develop new markets. They received export awards successively for three years for their outstanding export performance by Basic Chemicals, Pharamaceuticals and Soaps Export Promotion Council, Bombay.

India's agarbatti exports fetched Rs. 15.85 million in 1972-73. The exports rose consistenly during the preceding years – Rs. 10 million in 1969-70, Rs. 12.75 million in 1970-71 and Rs. 14.10 million in 1971-72.

Among the large number of countries that imported Indian agarbattis during the year, U.S.A. was the principal buyer which imported worth Rs. 3.7[illegible] million, followed by Nigeria at Rs. 1.75 million, Ethiopia at Rs. 1.60 million and Singapore at Rs. 1.[illegible] million. Among other destinations, U.K., Canary Islands, Canada, France, Netherlands, Nepal, Kenya, Malaysia, Federal Republic of Germany and Siera Leone were significant.

In the preceding year, U.S.A. (Rs. 4 million), Ethiopia (Rs. 1.38 million) and Singapore (Rs. 1.20 million) were the leading markets.

EXPORT PERFORMANCE AND POTENTIAL

MORE FOREIGN EXCHANGE FROM COTTON TEXTILES

Compared to the export earning in 1972 at Rs. 1094 million, India's cotton textiles earned Rs. 1500 million in 1972 and Rs. 1552 million even in the first ten months of 1973 (January–October). The share of cotton piecegoods rose from Rs. 666 million in 1971 to Rs. 811 million in 1972 and Rs. 968 million in the period under review in 1973. Cotton yarn exports rose from Rs. 129 million in 1971 to Rs. 227 million in 1972 and registered a decline at the level of Rs. 113 million in the first ten months of 1973. Apparel exports rose from Rs. 118 million to Rs. 248 million and Rs. 263 million.

For the export of cotton textiles, India has quota arrangements with U.S.A., U.K. and EEC countries. In 1972-73, the quota with U.S.A. was of the order of 121.3 million sq. yards while India had actually exported 143.5 million sq. yards. In the same year, the quota with EEC was 11,500 tonnes while actual performance was only 8,405 tonnes. With U.K., the quota for yarn exports was of the order of 12.21 million lbs. while actually only 8.8 million lbs. of yarn was supplied. The quota for cloth was about 207 million sq. yards but the actual export performance was about 140 million sq. yards. Apart from these quota arrangements, India has a 'Self–Restraint Scheme' for regulating export supplies of bed-linen, pillow cases and blouses to Sweden.

U.S.A. is one of India's traditional buyers of cotton textiles but the quota restriction blocks the flow of textiles into that market. The restriction was introduced by U.S.A. as a measure to safeguard its own industry which is a considerably sophisticated one. The fact that India's export performance in the U.S. market exceeded the quota level in the earlier years in an ample proof of the growing demand for Indian textiles in that market. Other major importers of the cotton textiles from India are Afghanistan, Saudi Arabia, Bangladesh, Malaysia, Singapore, Sudan, EEC, U.K., Sweden, U.S.S.R., Czechoslovakia, Poland, Canada, Australia and New Zealand. During 1973, Japan and Hong Kong also started purchasing cotton textiles from India. It would be interesting to note that the share of free foreign exchange area in India's total export trade in cotton textiles was of the order of Rs. 1086 million during 1972-73 while that of the rupee area was Rs. 519 million.

Pursuant to worldwide shortage during 1972-73, international prices of cotton textiles went up sizeably. The U.S. market was particularly hit by cotton shortage. This situation has indeed helped Indian exporter to improve his supplies.

The Cotton Conversion Deal with the Soviet Union which was signed in early 1972 gave a further boost to India's textile exports by 126 million metres of cloth and 5 million pieces of towels. Supplies against the Deal have already been completed to the extent of 97 per cent. Textile shortage in Bangladesh also helped the Indian exporter. In fact, this country has recently emerged as a major importer from India. In addition to export of mill-made cotton textiles, there has been a growing volume of export of handloom piecegoods and made-ups in the past few years. During 1972-73, the total exports of handlooms amounted to Rs. 485 million of which cotton handlooms fetched Rs. 397 million. Cotton handloom fabrics secured Rs. 166 million while the handloom non-fabrics (made-ups) Rs. 70 million and handloom readymade garments Rs. 160 million.

To sustain the overseas interest in Indian cotton textiles, the Government of India have been taking measures, such as, making available adequate raw cottan at a reasonable prices, adding up substantially to the spindleage and loomage of the cotton textile industry, setting up of additional modern processing facilities, installation of special equipment, such as, terry towel, canvas, wide-width and corduroy looms and knitting machines suitable for working on spun yarns for producing fabrics with good export potential and improving investment climate in the industry by providing special tax reliefs for modernisation and expansion as well as liberalising the industrial licensing policy to enable large textile mills to expand for export production. The Government are actively engaged in evolving a policy for licensing additional capacities for yarn and cloth production specifically tailored to export markets.

The export target for cotton textiles for the year 1973-74 has been set at Rs. 1750 million. These exports during April-October, 1973 are estimated at Rs. 1090 million and it is hoped that the target would be attained.

UPTREND IN SILK EXPORTS

India's overseas supplies of silk goods during the first seven months of 1973-74 (April-October, 1973) secured foreign exchange worth Rs. 68.20 million as compared to Rs. 43.15 million in the corresponding period of the preceding year. The exports rose sharply by about 58 per cent during the period under review of 1973-74 over those in the corresponding period of 1972-73.

Of the total export earning during April-October 1973, mulberry silk goods alone secured the bulk of earning at a value of Rs. 57.54 million as compared to Rs. 36.12 million (April-October 1972) while the share of tasar silk goods amounted to Rs. 10.64 million as against little over Rs. 7 million.

In the mulberry silk goods sector, all the varieties of goods registered sharp improvement. Dress material which constituted the major area of sizeable export earning secured Rs. 21.82 million (April-October, 1973) as compared to Rs. 12.41 million (April-October, 1972). Sarees was the next significant item which nearly doubled its offtake to Rs. 13.43 million from Rs. 7 million while scarves exports improved moderately to earn Rs. 12.73 million from Rs. 10.72 million. Among other varieties, readymade garments exports looked up to Rs. 6.93 million from Rs. 4.17 million, ties to Rs. 1.64 million from Rs. 1.38 million and others to Rs. 1 million from only Rs. 390,000.

Federal Republic of Germany was the principal importer of mulberry silk goods from India which improved its intake to Rs. 10.84 million from Rs. 8.18 million during the period under review of 1973-74 and 1972-73. U.S.A., U.K. and France respectively purchased more at Rs. 5.33 million, Rs. 5.12 million and Rs. 5.70 million as compared to Rs. 3 million, Rs. 2.20 million and Rs. 3.98 million. Malaysia and Singapore together purchased worth Rs. 7 million as against Rs. 3.44 million while Japan doubled its intake to Rs. 4.42 million from Rs. 1.86 million. Kenya, Switzerland, Italy, Sweden, Belgium, Denmark and Hong Kong were among other buyers.

In the tasar silk goods area too, Federal Republic of Germany topped the list of buying countries with an increased intake at Rs. 5.70 million as compared to Rs. 3.47 million. U.S.A., the second important importing market purchased more at a cost of Rs. 1 million as compared to Rs. 707,000. Japan, Sweden, Switzerland, Italy and France were prominent among other buyers.

During the entire year of 1972-73, India's total exports of silk goods totalled Rs. 83.10 million, according to the Central Silk Board, Bombay. In 1971-72, the exports were of the order of Rs. 71.15 million. The target for 1972-73 had been placed at Rs. 100 million.

The variety-wise exports during 1972-73 was: readymade garments Rs. 8 27 million; scarves Rs. 18.35 million; ties Rs. 2.30 million and dress material Rs. 25.50 million.

EXPORT TRADE IN MONKEYS

India exports monkeys among others to U.S A. and U.K. for medical research and for production of polio and yellow fever vaccines. During 1972-73, 34,721 monkeys were exported in all to fetch Rs. 3.52 million.

Until March 1955, there was no restriction whatsoever on the export of monkeys from India except in closed season (April-August). The exports were permitted only if the monkeys were carried by air and were required for the purpose of medical research. It was recognised then that vivisection of monkeys inevitably entailed misery and hardship to these unfortunate animals. But in the interest of modern medicine, the exports were allowed on a limited scale. It was decided therefore that monkey exports should be permitted only for the production of vaccines and for medical research purposes within a quota to be fixed every year. Export for pet zoo purposes is also allowed on a restricted basis. However, export of infant and juvenile Rhesus monkeys is not allowed. The Government of India have laid down conditions to ensure that the monkeys for export are treated humanely at all stages - from the point of their captivity till they are loaded in the aircraft for export. Even the pattern of holding cages has been prescribed by the Government.

During 1973-74, an annual ceiling of 30,000 monkeys has been released for export purposes. The annual ceiling is, however, being gradually reduced. In late Fifties it was as high as 250,000.

During 1972-73, U.S.A. was the major importer – 22,920 monkeys at a value of Rs. 2.39 million. Exports to U.K. fetched Rs. 0.4 million, U.S.S.R. Rs. 0.24 million and Netherlands Rs. 0.14 million.

SIZEABLE INCREASE IN HANDICRAFTS EXPORTS

The year 1972-73 witnessed a substantial increase in India's export trade in handicrafts. The exports including gem and jewellery reached a new high of

Rs. 1306.20 million during the year compared with the export value of Rs. 905.20 million during 1971-72. A 44 per cent improvement in the export value has enabled the handicraft industry to improve its share in the country's overall export trade to 6.7 per cent in this year as against 2.8 per cent during 1961-62.

Export trade in handicrafts presents a consistent uptrend which was of the order of Rs. 193.40 million in 1961-62, Rs. 275.80 million in 1965-66, Rs. 807 million in 1970-71 and Rs. 905.2 million in 1971-72.

The contribution of gems and jewellery to the handicrafts export trade was of the order of Rs. 788.20 million in 1972-73 as compared to Rs. 522.90 million in the preceding year. Handicrafts other than gem and jewellery earned Rs. 518 million against Rs. 382.30 million in the respective years.

An analysis of 15 broad groups of handicrafts in their export trade would reveal that the highest increase in terms of value was recorded by precious, semi-precious and synthetic stones ; their exports rose from Rs. 515 million in 1971-72 to Rs. 779 million in the year that followed. Export trade in woollen carpets, rugs and druggets including numdahs registered an increase by Rs. 77.50 million to fetch Rs. 214.40 million during 1972-73. In the same year, the export of art metalware was higher at Rs. 86.50 million as compared to Rs. 71.20 million. Woodware also improved its overseas demand and its exports stood at Rs. 40.42 million during 1972-73. In the area of handprinted textiles and scarves, the exports rose to Rs. 48.27 million as compared to Rs. 44.98 million. Imitation jewellery has registered improvement at Rs. 21.68 million as compared to Rs. 12.68 million.

Apart from these, jari, ivory products, carpets, rugs and durries of cotton and miscellaneous handicrafts have witnessed uptrend during 1972-73 as compared to preceding year. Embroidered goods was the only category of exports which registered marginal decline.

Among other handicrafts, about 28 items were supplied overseas during the year to fetch Rs. 73.37 million. In the preceding year, the export value was of the order of Rs. 56.41 million. Leather goods, agarbattis and other works of art were the items which registered significant increases during the year (1972-73). Musical instuments, laces and lace goods, carpets, carpettings, stone work and alabaster, walking sticks, horn articles, articles of wicker work, dolls and toys, articles of grass, flax and fibre and coconut shell, papier machie articles and stuffed animals were the other items, the export of which registered moderate increases.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

TRENDS IN INDUSTRIAL DEVELOPMENT

India's national income has been estimated at an average of about 2 per cent for the years 1971-72 and 1972-73 as compared to the growth rate during 1970-71 at 4.6 per cent.

The year 1972 was characterised by an overall buoyancy in India's industrial production, the index having recorded a growth rate of 7.1 per cent in this year compared to a mere 2.9 per cent recorded in 1971. This satisfactory growth rate should be viewed against a variety of stresses and strains, such as, the general rise in price index.

An analysis of the 1972 index of industrial production by industrial groups and sub-groups would indicate that all the major groups recorded encouraging improvements in output – electricity generation was up by 9 per cent, mining and quarrying by 7 per cent and manufacturing activity by 7 per cent. The major growth leaders in the manufacturing field were chemicals (16.2 per cent), transport equipment (9.3 per cent), non-metallic minerals (8.5 per cent), leather and fur products (8.3 per cent), textiles (8 per cent), non-electrical machinery (8 per cent), basic metal industries (8 per cent), electrical machinery (7.5 per cent) and rubber products (6 per cent).

Compared with 1971, there has been an obvious revival in the production of certain key areas during 1972, such as, cotton textiles, basic metal industries, non-electrical machinery and transport equipment.

The index of industrial production for the first four months of 1973 (January-April) stood at 198.3 which was, however, 0.2 per cent less as against an increase of 7 per cent registered in the corresponding period of 1972.

During January-July, 1973, the industries that recorded production improvement by over 20 per cent include sugar, chrome tanned hides, synthetic detergents, vat dyes, solubilized vats, coated abrasives, copper ingots, transmission towers, light and medium structurals, brights bars, tractors, road rollers, boilers, lifts, power driven pumps, cement machinery, tea machinery, dairy machinery, gas cylinders, power transformers, commercial vehicles and ship building. Industries that have recorded increases in production (ranging between 10 to 20 per cent) include, coal, phostphatic fertilizers, paints, optical bleaching agents, lead, electric motors, electric lamps, VIR/PVC cables and wires, scooters, three-wheelers and bicycles.

ENGINEERING FIRM SPECIALISES IN TURNKEY ASSIGNMENTS

Among the engineering firms in India that have developed technical expertise to undertake turnkey assignments at home and abroad, M/s. Engineering Projects (India) Limited (EPI), has made good headway. Lately, it has secured two turnkey assignments for setting up sugar plants with a capacity of 1250 tonnes crushing capacity per day in the face of stiff competition. The plants are to be set up in Andhra Pradesh and are expected to be commissioned during 1975 and 1976.

The firm has, so far, secured 19 turnkey projects of an aggregate value of Rs. 570 million. Among the projects under implementation at present, include a coke oven project at Durgapur, bulk material handling project at Kandla, rock phosphate benificiation project at Udaipur, coal handling project at Panki, construction of International Airport at Palam, construction of interchanges and approach viaducts for second Hooghly Crossing Project at Calcutta, raw material handling project at Bhilai, coal crushing plant at Bokaro, limestone crushing plant at Bokejan, coal handling plant at Faridabad, indoor stadium at New Delhi, ash handling plant at Faridabad and expansion of M/s. Hindustan Latex Limited at Trivandrum.

With the practical experience gained so far in turnkey projects, EPI is now poised to enter foreign markets. It has already offered services for undertaking turnkey assignments abroad in the various fields of manufacture. It has recently offered to undertake a turnkey job of semi-integrated steel plant at Iraq at a cost of about Rs. 700 million and the firm is hopeful of securing the same.

BHARAT ELECTRONICS
A PROFILE

From Rs. 600,000 in 1971-72 to Rs. 10 million in 1972-73, M/s. Bharat Electronics Limited, Jalahalli, Bangalore, have achieved a record export growth. The firm's sophisticated electronic products are sought by a well diversified range of destinations abroad which include developed markets like U.S.A. and U.K.

BEL's production was estimated at Rs. 391.10 million during 1972-73, registering a 19 per cent increase over the production level in the preceding year. Of the total value, the main equipment accounted for Rs. 279 million while the share of components totalled Rs. 112 million. In the same year, production of equipment and components based on its own design was valued at Rs. 88 million while that based partially on collaborator's design and partially on its own design was of the order of Rs. 60 million. In terms of percentage, the respective shares come to 24 and 16 of the total value of production.

In its endeavour for increasing indigenous content in the overall production, BEL has been successful in bringing down the foreign exchange content. For example, in the total completed production worth Rs. 195.40 million during 1968-69, the foreign exchange content was of the order of Rs. 69.40 million or 35 per cent. It came down to 24 per cent in 1972-73.

On home front, BEL supplied sophisticated T.V. transmitters and TV equipment for the proposed stations at Madras, Calcutta, Kanpur and Lucknow. A new item–radar–was taken up for production for frigates during 1972-73. Only recently, the first of its kind was delivered to M/s. Mazagon Docks Limited.

BEL has in its infra-structure eight equipment development wings. In the HF and VHF range, it has undertaken a new generation of communication equipment to replace those in use in defence. Of these equipment, over a dozen types have been developed and are presently undergoing trials; they are expected to go on production stream within a couple of years. Apart from the production of defence equipment, BEL developed a communication system for units operating self-propelled guns and a solid state gun equipment for tanks.

A four channel airborne VHF set for use in light aircrafts has also been completed during the year. In VHF range, it has developed a system capable of taking up to 120 channels to be used in radio relay by M/s. Indian Oil Corporation (IOC) and Posts and Telegraphs Department.

Besides, development works on peripheral epuipment for computers, like the paper tape reader and the paper tape punch was completed and construction of prototypes has been undertaken. Cross bar and switching units required for TV station set ups were also undertaken and completed. Development projects to meet the requirements of All India Radio, such as, FM Transmitter and mobile broadcast transmitter have also been developed.

On the components side, BEL was successful in developing 5 types of receiving valves, 2 types of cathode ray tubes, two types of transmitting tubes and 3 types of microwave tubes. In the field of electron tubes, semi-conductors and passive conductors, BEL's development activities are continued. Aside from this, it has also completed development work on 3 types of germanium semi-conductors, 5 types of silicon semiconductors and 15 types of hybrid micro-circuits. Its project for the development of Digital Integrated Circuits undertaken in collaboration with the Tata Institute of Fundamental Research is also under progress and the first device in the series viz. T.T.L.-7420 was successfully completed. In addition, it has also developed 11 types of crystal filters.

BEL has sought to directly explore the possibility of utilising the development potential available in several National Laboratories, Defence Science Organisations as well as from some manufacturers for increasing indigenous content in equipment and components. For instance, mangnesium manganese dioxide batteries developed by the Indian Institute of Science are currently under trial. For the development of liquid crystal displays, an agreement with the Raman Research Institute, Bangalore has already been concluded by BEL. It is noteworthy to mention that as a result of investigation and initiative undertaken by BEL, over a dozen research institutions and manufacturers have been induced to take interest and they came forward to undertake development and supply of over 25 items which are currently being imported.

The firm's second plant, presently being set up at Ghaziabad in Uttar Pradesh, is under progress and is expected to go on production stream by the end of 1973.

BEL is progressively diversifying its activities to undertake new types of assignments. Recently, it secured a turnkey job for establishment of a microwave communication system linking Barauni with Kanpur and Haldia. The project includes field survey, civil works, designs and construction of towers, design, manufacture and supply of UHF equipment and antennas, power generation and multiplex equipment, exchanges and air conditioning as well as complete systems engineering and installation. The equipment required for the project will be supplied by BEL and other indigenous firms and the additional task of systems engineering and installation will be undertaken by BEL's second unit at Ghaziabad.

FERTILIZER PLANNING

India's fertilizer requirement by 1978-79 would be 5.2 million tonnes of nitrogen and 2.2 million tonnes of P_2O_5, according to the estimates of the Ministry of Food and Agriculture. Based on these estimates, the installed capacity was recommended at 7 million tonnes of Nitrogen and 2.8 million tonnes of P_2O_5 for the Fifth Plan period.

The Approach Document to the Fifth Plan has envisaged domestic production of 3.912 million tonnes of Nitrogen and 1.174 million tonnes of P_2O_5 by 1978-79 in the context of resource constraints. It has recognised the economic advantages of creating domestic fertilizer capacity when compared to the alternative of imports in terms of foreign exchange savings.

It has therefore envisaged that additional fertilizer production may be planned to the extent that resources would permit. Current thinking is to create capacity adequate for the production of 4.8 million tonnes of Nitrogen and 2 million tonnes of P_2O_5 by 1978-79.

Against this background, the programme of augmenting production of fertilizers is being chalked out. At present, fertilizer capacity in operation in this country is 1.464 million tonnes of Nitrogen and 0.510 million tonnes of P_2O_5. The utilisation of nitrogen capacity has increased from 63.9 per cent in 1970-71 to 65 per cent in 1971-72 and 72 per cent in 1972-73. The utilisation of P_2O_5 capacity has been lower and was 64 per cent only in 1972-73. In respect of both, Nitrogen and P_2O_5, the actual production against the installed capacity is feared to have suffered a setback in 1972-73.

The low utilisation of capacity was seen mainly in Rourkela (43 per cent), Neyveli (29 per cent), FACT (37 per cent), Sindri (63 per cent) and Nangal (68 per cent). Measures are under implementation to improve their performance.

Additional capacity of 2.661 million tonnes of Nitrogen and 0.663 million tonnes of P_2O_5 would be contributed by projects currently under execution. Production in 1978-79 based on above capacities is expected to be of the level of 3.290 million tonnes of Nitrogen and 0.820 million tonnes of P_2O_5.

Based on production levels envisaged in the Approach Document, five public sector plants have been approved in principle. The locations currently being contemplated are Bhatinda, Panipat, Mat (all inland locations) and Paradeep and Tro (coastal locations). These together will contribute to increase in capacity of 1.365 million tonnes of Nitrogen and 0.738 million tonnes of P_2O_5.

With the implemention of these projects, the production achieved by 1978-79 is likely to be 4.100 million tonnes of Nitrogen and 1.190 million tonnes of P_2O_5.

Some additional projects in the private sector may also be encouraged to come up. These include the Tata project at Mithapur.

ON KHADI INDUSTRY

Khadi or the hand-spun cloth, which was a symbol of economic self-reliance in pre-independence India continues to occupy an important position in the country's economy today. The khadi industry provides sizeable employment (121,000 full time and 842.000 part-time employment during 1971-72) and contributes an earning of Rs. 155 million (1971-72). Khadi production, both in terms of yarn and cloth is of the order of Rs. 275 million per annum.

The production of khadi yarn of three varieties, namely cotton, woollen and silk, aggregated 11.8 million kgs. during 1971-72 which was a 23 per cent improvement over the output of the preceding year. The production of cotton yarn (khadi) at 9.5 million kgs. accounted for 19 per cent of India's total production of cotton yarn in the year. The production of woollen yarn (khadi) at 2.2 million kgs. represented a 40 per cent increase over that in the previous year. The production turnover of silk yarn (Khadi) also recorded an increase of 35 per cent at 136,000 kgs. in 1971-72 as compared to the year before.

The production of khadi cloth of all varieties aggregated 54 million sq. metres valued at Rs. 277 million during 1971-72. The output of cotton khadi stood at 45.25 million sq. metres in the year. The major states producing this variety were Uttar Pradesh (25 per cent), Tamil Nadu (19 per cent), Bihar (14 per cent), Andhra Pradesh (13 per cent), Gujarat (7 per cent) and Rajasthan (5 per cent). It is estimated that of the total khadi produced, nearly 66 per cent is from yarn up to 33s, 29 per cent from yarn between 40s to 64s and the balance 5 per cent is muslin khadi. The production of woollen khadi was of the order of 6.9 million kgs. in 1971-72, which represented a 26 per cent improvement over the output for the previous year. The major states producing woollen khadi are Uttar Pradesh 33 per cent, Rajasthan 27 per cent, Mysore 16 per cent, Punjab 7 per cent, Haryana 5 per cent and Jammu & Kashmir 3 per cent. While the production of silk khadi was over 1.9 sq. metres during 1971-72, West Bangal had a lion's share in the total production (51 per cent). The other states in order of importance were Bihar, Tamil Nadu, Uttar Pradesh and Assam.

An increase of about 45 per cent in the volume of total sales of khadi was registered during 1971-72 as compared to the previous year. An export show window has been recently set up at Bombay for selling the product. The Khadi and Village Industries Commission has recently visited an international trade fair in Brussels and has raised keen interest among the visitors of the fair.

The amount of total exports of khadi in the year 1971-72 aggregated to Rs. 106,000.

An interesting feature of the industry pertains to the work of the Commission and its ancillaries in foreign countries. The Bihar Khadi Gramodyog Sangh has undertaken khadi activity in Sikkim. Thrity–three cases containing spinning wheel, accessories and spares were despatched by the Commission to Awasa Community Development Training and Demonstration Centre, Awasa in Ethiopia.

Progress has been achieved by the Khadi industry in the field of research also. Pre-processing machines and new spinning model charkha (spinning wheel) have been invented for spinning yarn. Also inexpensive materials have been located as sizing materials in– wild onion, gavar and kahu seed. A five shuttle box sley in which three boxes on one side and two on the other, has been designed for weaving a four colour pattern. A six shuttle box sley for weaving 5 colour pattern has also been fabricated with 102 c.m. per hour speed. In the field of wool weaving, merino wool has been successfully woven on certain model looms. Improved carding machine suitable to card cotton for fine count yarn, a multispindle spinning frame with 48 spindles operated by electric power have also been made.

In the area of silk khadi, pre-processing units have been evolved with power to utilise tusore cocoons. Efforts are being made to produce processing unit for processing mulberry waste that is available in large quantity in India. A simple silk twisting machine has been evolved by one of the Khadi Institutions in West Bengal on the basis of a Japanese model with ¼ h.p. machine capacity for 400 grams of mulberry silk yarn and 500 grams of spun silk yarn.

Experiments on ring frame from the woollen tops are in progress in Gujarat. Improvement of 'charkha' with a view to contain all the processes so that it may be possible to spin right from the raw wool is also under way. New designs in wool khadi are being introduced to meet the requirements of emerging demand, specially for hosiery. The technique of printing has been improved by the introduction of 'Tie and dye' method which is popular in cotton in certain areas of Rajasthan. This technique is particularly employed for ladies' shawls and scarfs. Efforts are also under way for the production of printed material with an eye on the export potential.

In addition to the progress being made by the Khadi industry, the Khadi and Village Industries Commission has made advances in a variety of small scale industries, such as, cereals and pulses processing industry, village leather industry, cottage match industry, manufacture of cane gur and khandsari industry, non-edible oil industry and soap industry, hand-made paper industry, bee-keeping industry and so on.

ON IMPORT CANALISATION

It has been the policy of the Government of India to progressively canalise imports through public sector agencies. Presently the import of 202 items is canalised through these agencies. Upto 1968-69, the import of only 11 items was canalised while 22 items were canalised in 1969-70, 61 items in 1970-71, 112 items in 1971-72, 182 items in 1972-73 and 202 items in 1973-74.

The import of items is canalised through the State Trading Agencies in view of certain objectives and criteria, namely, economy in prices and transport arrangements through collective bargaining and bulk purchases; mopping up of profits of speculative items and items with high margins of profit; effective utilisation of foreign exchange resources available with the Government; providing better service to actual users and consumers, particularly small industries and extending the role of state agencies where they have acquired special expertise and knowledge.

The dominant role assigned to the public sector agencies in the context of India's foreign trade would be apparent from the progressive increase in import licensing in their favour. The share of licensing in favour of public sector in the total import licensing was 40 per cent in 1968-69, 45 per cent in 1969-70, 52 per cent in 1970-71, 64 per cent in 1971-72, 66 per cent in 1972-73 and 75 per cent in 1973-74 (upto August 1973).

Apart from the canalised items, the public sector agencies have also been assigned a task of import in bulk certain raw materials so that they would be able to make efficient arrangements for procurement through imports and their distribution to actual users. The State Trading Corporation has set up an Industrial Raw Material Assistance Centre (IRMAC) for arranging off the shelf deliveries to actual users and registered exporters against valid licences held by them. The Hindustan Steel Limited have also similarly set up a 'Steel Bank' for off the shelf supplies of iron and steel items. The 'Bank' maintains stocks of certain critical and strategic categories of steel items so that the priority user, both in the public and private sectors could be supplied with steel ex-stock against their valid import licences or import entitlements against exports.

In evolving the pricing policy of raw materials imported by the canalising agencies, two factors are kept in view : the pricing policy has to be such that the export sector (units exporting 10 to 25 per cent and more of their production) are given preferential treatment in terms of the prices of imported raw materials supplied to them by the canalising agencies. The pattern of pricing and the margin of canalising agencies is to be related to items of import. There could be items in which the canalising agencies should mop up profits or items where the intention would be to stabilise prices in the interest of the consumers and items for which an amalgam of these considerations could be taken into view. Bulk imports like non-ferrous metals and steel handled by the State Trading Agencies would have to be differentiated.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

RESEARCH AND DEVELOPMENT IN JUTE MANUFACTURES

Jute manufactures constitute India's prime foreign exchange earner. Lately, however, synthetics and substitutes have made heavy inroads into jute markets and the jute manufacturers of developing countries like India are exposed to the growing list of such substitutes which the developed countries are evolving constantly. The future of jute depends upon research effort for improving the yield per acre of raw jute as well as for diversifying the end-uses of jute products. Currently in India, the research activities in respect of raw jute and jute manufactures are undertaken by the Indian Jute Industries Research Association (IJIRA), Calcutta. The annual budget on research and development on all aspects of jute is of the order of Rs. 8 million which stands at 0.2 per cent only of the total turnover of the industry estimated at Rs. 4000 million.

The IJIRA is engaged in projects, such as, genetic and agronomic research and demonstrations on reducing the cost of jute cultivation, improvement in the possibility of using jute in chemical, biological and mechanical pre-treatments, design and development of new products from jute and testing and quality control. Besides IJIRA, the Jute Agricultural Research Institute and the Jute Technological Research Laboratory also carry out research under the auspices of Indian Council of Agricultural Research (ICAR) on jute, mesta, sisal, ramie and other long vegetable fibres. To augment research and development activities in the field, it is proposed to constitute a development council for jute manufacturers consisting of the Jute Commissioner (Chairman), representatives of industry and research organisations. Also there is a proposal to levy development cess on jute manufacturing units for use on basic research, product development and market research. It is hoped that these research efforts would diversify the product-variations of jute for new end uses.

Export trade in jute goods amounted to nearly Rs. 2500 million during 1972-73 as compared to Rs. 2647 million in the preceding year. In the period April-August 1973-74, the export value stood at Rs. 1002 million as compared to Rs. 1132 million in the same period of 1972-73. The fall in export trade was due to the decline in the offtake of hessian and sacking although other constructionsc omprising mainly cotton bagging registered a marginal increase. Hessian and sacking have been facing a continuous erosion from the synthetics and substitutes in the U.S.A. and West European countries.

The current petroleum crisis in the world, however, promises to alter the picture in regard to the export of jute goods from India as the synthetics will not have that price edge over jute goods which they have been enjoying so far.

The Government of India have taken a series of remedial measures to arrest the decline in the export of jute goods. Since carpet backing is considered one of the most promising field for expansion of exports, the export duty on the item was brought down. The duty on hessian exports is also reduced from Rs. 600 per tonne to Rs. 200 per tonne and the export duty on sacking has been abolished. Added to this are the intensified efforts for research and development. Attention is being particularly paid to the evolution of lighter fabrics and new end-uses for jute goods.

ANTI-CORROSIVE PAPER

A new anti-corrosive (V.C.I) paper with the brand name "No-Rust" has been introduced by M/s. Paper and Allied Products, Kanpur, for packaging engineering goods.

No-Rust is a wrapping paper which has been either coated or impregnated with a special chemical formulation. The chemicals vaporise from the paper surface at controlled rate and envelop the product wrapped therein. An invisible protective film forms over the product and render any moisture present non-corrosive. In fact, 'No-Rust' belongs to a category known as V.C.I. (Vapor Corrosion Inhibitor) or V.P.I. (Vapor Phase Inhibitor) papers.

The life of a product is dependent on various factors including proper usage. No-Rust will, however, afford positive protection for at least six months. For longer protection, the product can be re-wrapped with fresh 'No-Rust' paper. Alternatively, a grade with a longer life span, if so desired, can also be manufactured.

'No-Rust' is based on know-how developed abroad and effectiveness of the formulation used confirmed in laboratory and field trials. 'No-Rust' should not be confused with bitumenised waterproof, waked or grease-proof paper. Thase latter products will keep direct water or rain out, but cannot prevent rust due to humidity or water vapor present in the atmosphere which is bound to penetrate the package and cause corrosion. 'No-Rust' counteracts the corrosive effects of atmospheric moisture. In fact, 'No-Rust' can be further processed with wax or other compounds, so that direct water is also rendered harmless. This is not necessary if the product is placed in an outer carton or container after being wrapped with 'No-Rust' paper as this will keep direct rain or water out.

Articles, such as, bare steel, mild steel and even alloys like razor blades, surgical blades, sewing needles, machine tools, aircraft and automobile spares, ball bearings, discs, precision instruments, steel wire or strips, arms and ammunition, hardware and handtools, can be protected by "No-Rust'. Even complete machinery can be protected by lining the crate in which assembled machines are shipped with the product. The protective vapors fill the crate in due course and afford complete protection to the whole unit.

'No-Rust' has manifold advantages. The old fashioned process of either oiling or greasing the article is eliminated. Expensive waxed paper to wrap the product after greasing in order to keep the grease in, is not required. The accuracy, efficiency or appearance of the product remains unaffected since no messy grease or oil is present to foul up the product in any manner. The customer is saved the botheration and expense of having to degrease and clean the product before use. It saves valuable floor space and capital cost by eliminating dipping baths required for application of grease or oil. The paper does not have to actually touch this product in order to give protection. In fact, 'No-Rust' protects even up to a distance of twalve inches.

One of the major advantages in using 'No-Rust' is that the product can be periodically inspected while simply unwrapping the product and rewrapping. Of course, protection ceases as long as the product is outside the package. It must be returned to the 'No-Rust' wrap for continued protection.

'No-Rust' is available in reels or sheets. The weightage of the paper ranges from 48 gsm. to 80 gsm.

DOUBLE ECCENTRIC VIBRATING DEVICE FOR VIBRATING SCREENS

The Regional Research Laboratory (RRL), Hyderabad, has designed and developed a double eccentric vibrating device with which it is possible to have a control on the direction and amplitude of vibrations of the vibrating screen.

In the conventional single-eccentric vibrating device, there is no control on the direction of vibrations which occur in all directions due to centrifugal forces. In the double eccentric device designed and developed by RRL, it is possible to have the vibrations in the desired direction, the vibrations in all other directions being mostly neutralised by equal and opposite centrifugal forces created by the two eccentrics.

The new device has got the facilities to adjust the direction of vibrations in the desired manner and also to vary the amplitude of vibrations. This device can be fitted to any type of vibrating screen, whether single deck or parallel multideck or zig-zag multi-deck.

The device has certain advantages. For instance, the control on the direction and amplitude of vibrations makes the screening machine adaptable for efficient screening of a wide range of dry free-flowing materials. One six-deck vibraing screen of zig-zag construction has been fitted with this double eccentric vibrating device for screening sillicon carbide grain. The performance of screening on this machine is found to be very much better than other types of screening machines, and is considered to be highly satisfactory for commercial screening of fine grifts of silicon carbide and other similar materials.

Besides, the power consumption and noise level of this machine are considerably lower than those of a vibrating screen fitted with single eccentric vibrating device. This is on account of the additional power wasted in creating the vibrations in all directions other than the desired direction. The actual power consumption in the case of the double eccentric device will be about 25 per cent of that of the single eccentric device.

FACTS ON TRADE WITH EAST EUROPE

India's two-way trade with U.S.S.R. and other East European countries has risen from Rs. 84.50 million in 1953 to Rs. 6185 million in 1972. With U.S.S.R., the largest country in this group, the increase was from Rs. 12.70 million to Rs. 3677 million in the respective years. The share of East Europe in India's global exports rose from 7.5 per cent in 1960-61 to 31.3 per cent in 1972-73.

Although traditional items have had a major share in the total exports from India to East Europe, the trend in the last few years has been to peg the traditional exports more or less at current levels and to concentrate on increasing the exports of non-traditional items in the form of semi-processed, processed and manufactured goods. The progress of economic reforms in several East European countries and the steady increase in demand for large varieties of new items, not only in manufactured and engineering goods but also in processed and consumer goods have come to throw up opportunities for further growth and diversification.

The first ever regular export of many prestigious items from India was made to the East European region. Such products include railway wagons, tipper trucks and jeeps, wire ropes, textile machinery, industrial fastners, transistor radios, surgical instruments, ready-made garments, thermos flasks and refrigerators. Prospects are also emerging now for the export of complete plants, such as, cement plants. Some of the East European countries have also come to import from India new consumer items like cosmetics, toiletries and hand and machine-made carpets.

The proportion of non-traditional exports to East Europe has indeed been on the rise. In respect of U.S.S.R., the proportion targetted in the Trade Plans with that country is around 25 per cent and implementation has also been of the same order. In respect of other East European countries, the proportion of non-traditional items in the Trade Plans has been in the range of 20 to 30 per cent and the implementation has been of the order of 10 to 15 per cent.

The composition of imports from East European countries has also been changing gradually in keeping with the changing requirements of the Indian economy. Earlier, inevitable import of capital goods and substitutes constituted important items of import from East Europe. The import of essential plant and machinery and industrial raw materials indeed enabled India to save a considerable amount of free foreign exchange resources. With the growth in indigenous production, there has been a steady decline in the purchases of conventional machinery from East Europe in recent years. Their place is now being taken by such items as India would be needing; for instance, ships and shipping equipment, oil prospecting equipment, special steel and steels products, petroleum products, newsprint, copper, lead, kerosene oil and caprolactum. East European countries are also the major suppliers to India of fertilizers, particularly urea, calcium ammonium nitrate and muriate of potash as well as sulphur. In the field of non-ferrous metals also, zinc and nickel, palladium and platinum are being obtained from these sources.

U.S.S.R. is the largest trading partner of India in the socialist world accounting for over 50 per cent of India's trade with these countries. The Soviet Union occupied the prime position in India's global exports during 1972-73. In this year, Indian imports from that country amounted to Rs. 1060 million and her exports to U.S.S.R. were of the order of Rs. 3050 million. Among India's exports to U.S.S.R., the most important traditional lines are jute goods, tea, cotton textiles, tobacco, cashew kernels, semi-finished hides and skins, coffee, castor oil, spices, mica and deoiled cakes. Among her exports of non-traditional products to that country are engineering goods, readymade garments, woollen knitwear, leather shoes, chemicals and handicrafts. In the list of Indian imports from U.S.S.R., the major products are newsprint, kerosene oils and lubricants, rolled steel products, asbestos, sulphur, zinc, copper, nickel, palladium, ammonium sulphate, muriate of potash, urea, chemicals, drugs and medicines, ships, machine tools and printing machinery. The present share of non-traditional items (about 22 per cent) is sought to be increased further.

While such is the trade pattern with U.S.S.R., India's trade with other East European countries is as follows : With Bulgaria, the two-way trade traffic increased from nearly Rs. 100 million in 1963 to Rs. 246 5 million in 1972. Indian exports rose from Rs. 43 million to Rs. 180 million while her imports were Rs. 57 million and Rs. 66 million in the respective years. The share of traditional items in 1973 Trade Plan with Bulgaria was 65.5 per cent and that of non-traditional items 34.5 per cent.

Total trade with Czechoslovakia rose from Rs. 474 million in 1963 to Rs. 584 million in 1972. Indian exports improved from Rs. 217 million to Rs. 440 million while her imports were reduced from Rs. 257 million to Rs. 143 million. The share of non-traditional items in 1973 Trade Plan with that country was nearly 30 per cent.

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Two-way trade with German Democratic Republic totalled Rs. 283 million in 1963 and Rs. 337 million in 1972. Indian exports in these years were Rs. 142 million and Rs. 145.50 million while her imports were Rs. 141 million and Rs. 191 million respectively. The share of non-traditional items as provided for in the Trade Plan of 1973 was 27 per cent.

With Hungary, India's foreign trade increased from Rs. 190 million in 1963 to Rs. 266 million in 1972. Indian exports were Rs. 98 million and Rs. 137 million while her imports were Rs. 93 million and Rs. 128 million respectively. The contribution of non-traditional items as provided for in the 1973 'Trade Plan' was 27.6 per cent.

India's export trade to Poland improved from Rs. 140 million in 1963 to Rs. 386 million in 1972 while her imports from Poland rose from Rs. 17 million to Rs. 362 million. Thus, the total Indo-Polish trade increased from Rs. 312 million to Rs. 7 million. The contribution of non-traditional items in India's export trade to Poland was provided for at 4 per cent in the 1973 Trade Plan.

Indo-Rumanian trade rose several-fold from Rs. 76 million in 1963 to Rs. 301 million in 1972. Both Indian exports and imports were respectively on the rise. The exports improved from Rs. 38 million to Rs. 154 million and the imports from Rs. 37 million to Rs. 148 million. The share of non-traditional products in Indian exports to Rumania was earmarked at 10.4 per cent in the Indo-Rumanian Trade Plan for the year 1973. ☐

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PAPER CONDENSORS TO IRAQ

Alongside a comprehensive range of electrical machines, India supplies abroad a wide variety of electric apparatus and appliances. During 1972-73, the export trade in electrical machinery, apparatus and appliances together earned over Rs. 234 million as compared to the export value in the preceding year at nearly Rs. 187 million.

Besides the main machinery—electrical power machinery and switchgears, equipment for distribution of electricity, domestic electric equipment, telecommunication apparatus and electrical apparatus for medical and radiological purposes—the export range includes batteries and accumulators, electric lamps, thermionic valves and tubes, automotive electrical equipment, electrical measuring and controlling instruments and electro-mechanical hand tools.

M/s. R. G. Keswani Industries, 132, Annie Besant Road, Worli Naka, Bombay-18, one of the firms engaged in the export business of electrical goods, has recently secured an order from Iraq for the supply of 45,000 paper condensors. The firm had earlier supplied 1000 paper condensors to that country on a trial basis. After complete tests, the Iraqi authorities approved of the quality and placed this bulk order. The firm is further hopeful of receiving another sizeable order for 60,000 pieces from Iraq. During October, 1973, the firm has also exported 4000 pieces of these condensors to Sri Lanka.

The condensors are used in electric fans, flourescent fittings, air-conditioners and stabilizers. It is claimed by the firm that it is the first Indian firm to have received orders for these condensors on such a sizeable volume.

Besides paper condensors, the firm exports other electrical goods to markets the world over. It is stated to be the first to introduce India-manufactured switches to sophisticated markets like the United Kingdom. It received repeat orders from that country, following a trial order recevied for 20,000 switches in 1972. Lately, the firm has supplied 100,000 switches to West Asian countries.

CALCULATORS TO WORLD MARKETS

Office machines made in India have earned an export value of Rs. 22 million in 1972-73.

Statistical machines constituted the principal export group which secured Rs. 17.15 million. Australia, Japan, France and New Zealand were the leading customers of these machines.

Typewriters were mainly supplied to Nepal, Malaysia and Bangladesh to fetch nearly Rs. 1.55 million. Calculating machines, duplicating machines, stapling machines, parts of typewriter, cheque writing machines and statistical machines are also supplied overseas. Among the main buyers are Japan, Thailand Bangladesh, France, Hungary and Federal Republic of Germany.

M/s. Facit Asia Limited, Perugadi P. O. (Via) Tiru Vanmayur, Madras, exported 666 calculators during 1972-73. The firm has recently secured further export orders for 1500 calculators. It is to soon undertake manufacture of electronic calculators which will be marketed under its own brand name. The firm has already made suitable arrangements for quality control and inspection. The range of its customers covers a large number of markets far and near, including the developed ones.

From Rs. 30.90 million worth in 1970, the production of data processing machines during 1971 was of the order of Rs. 41.40 million. The range of output included calculators, punches, verifiers, sorters. collators, accounting machines, tabulators, interpreters, reproducers and gang punches.

RECENT EXPORT ORDERS FOR MICA

The Minerals and Metals Trading Corporation of India (MMTC) has concluded a Rs. 53 million export order for mica with the Soviet Union in August this year. It has also secured two orders from Rumania and Bulgaria valued at Rs. 7.93 million and Rs. 1.35 million respectively. Czechoslovakia is also understood to have placed orders supplementary to the Rs. 2 million export deal finalised earlier. German Democratic Republic too has concluded a three-year contract with MMTC at a cost of Rs. 30 million.

India's export trade in mica (including splittings and waste) fetched foreign exchange worth over Rs. 166 million in 1972-73 as compared to the export earning in the preceding year at Rs. 154 million. In terms of quantity, 27 million kgs. as against 22.75 million kgs. were supplied overseas.

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Of a comprehensive range of mica varieties exported, stained block from Bihar and Rajasthan, book form splittings, stained block condensor film trimmed, loose Andhra Ruby block, green block and spotted block were prominent during 1972-73. U.S.S.R., Poland, U.S.A., U.K., Netherlands, Japan, Saudi Arabia and Federal Republic of Germany were the principal importing countries.

Mica exports have been canalised through MMTC with effect from January, 1972.

EXPORT PERFORMANCE AND POTENTIAL

RECENT TRENDS IN INDIA'S EXPORT TRADE

Having registered a 22 per cent growth rate at Rs. 19,610 million over the previous year's value of Rs. 16,083 million, India's export trade has registered a 12 per cent rise in the first five months of 1973-74 (April-August, 1973) over the corresponding period of previous year. The export value was of the order of Rs. 8,510 million as against Rs. 7,550 million in these periods.

INDIA'S EXPORT TRADE - FOURTH PLAN TRENDS

(Rs. Million)

Year	Exports	Growth rate over the previous Year
1968-69	13,580	13.2%
1969-70	14,133	4.2%
1970-71	15,352	8.6%
1971-72	16,083	4.8%
1972-73	19,610	22.0%
1973-74 (April-August)	8,508	12.0%
1972-73 (April-August)	7,570	—

In the first quarter of 1973-74 (April-June), the latest period for which commodity–wise break-up is available, export trade in traditional products like cotton piecegoods, unmanufactured tobacco, oilcakes and East India hides and skins showed a clear upward trend. The offtake of jute manufactures, tea, cashew kernels and raw cotton, however, registered a decline. With a view to promoting exports, the Government of India have taken up several measures including exploration of new markets, generation of export surpluses and stepping up export production. Special development programmes have been drawn up to expand the output of major commercial products like jute, cotton and oil seeds.

In regard to export trade in cotton textiles, the production capacity of exportable varieties is sought to be substantially increased. Besides grey and printed varieties, export trade in blended and mixed fabrics, readymade garments, clothing and apparel is being encouraged. Through various forums and bi-lateral negotiations, industrial countries are being persuaded to liberalise their imports through reduction or removal of tariff and non-tariff barriers. Bulk orders for cotton fabrics are sought to be secured and conversion deals are encouraged.

As regards jute manufactures, their competitive position in foreign markets has been ensured by reducing export duties. More emphasis than hitherto is being laid on jute research and development. The Governments of India and Bangladesh are endeavouring to transform the competitive nature of the jute industry in the two countries into one of a complementary character.

The Government of India are encouraging additional tea cultivation by granting re-planting subsidies. India and Sri Lanka have an understanding on tea marketing and stabilization of tea prices. Promotion of instant tea and package tea in selected markets abroad with the co-operation of local blenders and packers has already been undertaken.

While exports of raw hides and skins are being restricted, emphasis is now laid on the export of finished leather and semi-manufactures and leather manufactures. This policy has already brought dividends in obtaining better export prices and earning more foreign exchange for the leather industry.

In the new markets for Indian wares—in Europe, Asia, Africa and Latin America—earlier experience has amply proved that good export possibilities exist for a wide variety of traditional and non-traditional categories including chemical elements and compounds, marine products, engineering goods, iron and steel, rubber manufactures, plastic raw materials, clothing, cotton yarn, blended cotton fabrics, carpet backing cloth and developed cinematographic films. To be able to make the best of the emerging marketing opportunities abroad, the Government of India have been following a multi-pronged export promotional strategy under which potential products are being continuously identified, measures are being designed for increasing their production and sales promotion techniques are being constantly strengthened. For improving India's successful participation in large value international tenders and turnkey projects also, the procedures for disseminating commercial information are being steamlined.

The principal countries to which Indian exports have increased during the last three years include U.S.A., U.S.S.R., U.K., German Federal Republic, France, Belgium, Italy, Netherlands, Sweden, Japan and Bangladesh. The major items in which increases have taken place were tea, coffee, cashew kernels, oilcakes, unmanufactured tobacco, cotton textiles, jute manufactures, leather and leather manufactures, fish, precious and semi-precious stones, clothing, floor coverings and tapestries.

Appreciable rise has been recorded in the offtake of leather and leather manufactures to the U.K., U.S.S.R., German Federal Republic, France and Belgium. Indian coffee is gaining popularity in the West European countries. Sizeable improvement has been registered in the export of cotton piecegoods to U.K. and U.S.S.R.

Compared to 1970-71, India's export position in regard to leading customers in 1972-73 can be mentioned briefly as follows : The Belgian market imported worth Rs. 203 million in 1970-71 and Rs. 301 million in 1972-73. Diamonds and leather were the two principal categories that accounted for the increase. Diamond exports rose from Rs. 103 million to Rs. 152 million and leather supplies from Rs. 17 million to Rs. 62 million in the respective years. To France, India exported goods worth Rs. 459 million in 1972-73 as against Rs. 180 million in 1970-71. Here again, leather accounted for the major share of the increase—Rs. 195 million against Rs. 42 million. Fish and fish preparations, coffee, cotton manufactures, pearls, precious and semi-precious stones were the other growth points to this country. The German Federal Republic increased its offtake from Rs. 232 million in 1970-71 to Rs. 623 million in 1972-73. Exports of leather rose manifold from Rs. 21 million to Rs. 155 million. The supply of floor coverings and tapestries has more than quadrupled from Rs. 20 million to Rs. 84 million. Sizeable improvement was noticeable in the offtake of several other products, such as, cashew kernels, coffee, tea, oilcakes, cotton manufactures excluding yarn, pearls and semi-precious stones and clothing. The Italian market absorbed as much as Rs. 410 million during 1972-73 as compared to only Rs. 140 million in 1970-71. The biggest growth point was leather—Rs. 354 million against Rs. 43 million. Coffee and rosewood were the other prominent items. Netherlands improved its offtake from Rs. 140 million in 1970-71 to Rs. 354 million in 1972-73. Tea exports improved by more than four times from Rs. 20 million to Rs. 93 million. Oilcake exports were negligible in 1970-71 but they earned Rs. 46 million in the year 1972-73. Cashew kernels, coffee, leather pearls, precious and semi-precious stones were the other active categories of exports from India. The U.K. market has also increased its imports from India from Rs. 1704 million to Rs. 1725 million. Considerable improvement was noticeable in respect of leather, cotton piecegoods and crude animal and vegetable materials. Marine products, fruits and vegetables, coffee, wool and other animal hair, jute manufactures and pearls and precious stones were the other important items of exports from India to that market. Among other West European importers, Swedish purchases rose from hardly Rs. 60 million in 1970-71 to Rs. 162 million in 1972-73. Supplies of clothing proved to be particularly active to this market.

U.S.S.R., the present outstanding market for India, has increased its offtake quite sizeably from Rs. 2100 million in 1970-71 to Rs. 3050 million in 1972-73.

Growth points to this market have been cashew kernels, tea, unmanufactured tobacco, leather, cotton fabrics, jute manufactures and clothing. U.S. imports rose from Rs. 2073 million to Rs. 2757 million in the respective years and the increase was mainly due to the jute manufactures which earned Rs. 793 million and Rs. 997 million in the respective years. Marine products constituted the most active line of export to Japan (Rs. 291 million against Rs. 120 million) which enabled the total export earning from that country to grow from Rs. 2035 million to Rs. 2170 million.

IMPROVEMENT IN UNIT VALUE OF EXPORTS

For most of the principal items of India's export trade, unit value has registered improvement. A kg. of tea, for instance, was exported at Rs. 7.54 during 1971-72, Rs. 7.62 during 1972-73 and about Rs. 8 in the first half of 1973-74 (April-September 1973). The unit value of coffee incrcased from Rs. 6182.10 per tonne to Rs. 6469.55 and Rs. 8159.36 in the respective periods. Unmanufactured tobacco fetched Rs. 7373.47 per tonne during 1971-72 but fell down to Rs. 6462.43 in 1972-73. However, it increased to Rs. 10909.10 in the first two months of 1973-74 (April-May) 1973.

Jute manufactures which consitute the prime category of India's export trade improved their unit value from Rs. 3953.50 per tonne in 1971-72 to Rs. 4302.25 in 1972-73. In the subsequent period (April-September 1973), however, the unit value came down to Rs. 4053.40. There has been a consistent uptrend in the unit value of oilcakes exports–Rs. 541.32 in 1971-72, Rs. 746.73 in 1972-73 and Rs. 1331.50 in the first half of the following year. Likewise, the unit value of cashew kernel exports also improved from Rs. 10153.97 per tonne to Rs 10380.10 and Rs 11250.

While the entire group of spices recorded an improvement in unit value from Rs. 5591 96 per tonne in 1971-72 to Rs. 6560.80 in the following year, the value per tonne of pepper fell from Rs. 7683.94 to Rs. 7190.95 in the respective years and it revived to fetch Rs. 7480.77 in the first half of 1972-73. A sizeable improvement in cardamoms was noticeable at Rs. 46333.33 per tonne in 1972-73 as compered to Rs. 37272.73 in the previous year. In the first half of 1973-74, the value was as much as Rs. 58885.

In line with international price trends, raw cotton export value per tonne also looked up from Rs. 5148.26 in 1971-72 to Rs. 5678.95 in 1972-73. The unit value of sugar was up from Rs. 953.58 to Rs. 1302.94 in 1972-73. Fish and fish preparations fetched more at Rs. 12727.27 per tonne in 1971-72 to Rs. 15691.64 in 1972-73 and Rs. 15972.97 in the period April-September 1973. There has been an enormous rise in the export value of lac and shellac. It was nearly Rs. 4810.20 per tonne in 1971-72 but improved to Rs. 8240 in 1972-73 and Rs. 16571.40 in the months that followed.

In the mineral group, iron ore fetched Rs. 52.61 per tonne in 1971-72, Rs. 53.30 in 1972-73 and Rs. 70.67 in the first half of 1973-74. In these periods, manganese ore fetched Rs. 101.26, Rs. 104.27 and Rs. 114.68 per tonne.

Cotton piecegoods (Mill-made) in the periods mentioned above secured Rs. 1.75, Rs. 1.88 and Rs. 2.08 per sq. metre respectively. Cotton handloom piecegoods earned Rs. 3.47, Rs. 3.51 and Rs. 4.40 per metre. Fabrics of artsilk, synthetic fibres and spunglass received a unit value of Rs. 3 in 1971-72 and Rs. 3.81 per metre in the subsequent year. In the same period, E.I. tanned hides and skins and chrome tanned secured more per kg.—Rs. 25.01 and Rs. 33.37. It improved, further to Rs. 37.43 in the first half of next year.

ENGINEERING GOODS BRING MORE FOREIGN EXCHANGE

In the first half of 1973-74 (April-September 1973), India's exports of engineering goods rose by 15 per cent over that in the corresponding period of the preceding year. The export value was Rs. 729 million against nearly Rs. 623 million, according to the

Engineering Export Promotion Council, Calcutta. These exports would, in fact, be more as they are exclusive of land route supplies and exports from minor ports.

India's exports of engineering goods recorded a 19 per cent increase during 1972-73 at Rs. 1502 million as compared to Rs. 1260 million in 1971-72.

During April-September 1973, sharp rise was recorded in respect of a number of items which include industrial plant and machinery, railway wagons, coaches and parts, M.S. pipes and fittings, bicycles and parts, hand, small and cutting tools, electric motors, transformers and switchgears, electronics, castings and forgings, steel products, batteries, non-ferrous products (other than aluminium), wire products, electric manufactures, airconditioners and refrigerators, wire ropes, ferrous holloware, bright bars and shaftings and miscellaneous manufactured articles. The exports, however, in respect of some items suffered setback. These include auto and auto parts, electric wires and cables, steel structurals, diesel engines and parts, electric fans and parts, railway track materials, mechanical pumps and sewing machines. The exports of aluminium and aluminium products and that of air compressors were more or less at the same level as in the corresponding period of the last year.

Value-wise, the export earning of these products during April-September 1973 and in the same period of 1972 was : Industrial plant and machinery Rs. 76.05 million against Rs. 62.25 million; railway wagons, coaches and parts Rs. 19.50 million against Rs. 5 million; M.S. pipes and fittings Rs. 58.75 million against Rs. 43.90 million; bicycles and parts Rs. 64.30 million against Rs. 46.20 million; hand, small and cutting tools Rs. 39.95 million against Rs. 37.90 million; electric motors, tranformers and switchgears Rs. 30.70 million against Rs. 21.85 million; electronics Rs. 34.30 million against Rs. 18.15 million; castings and forgings Rs. 23.25 million against Rs. 20.90 million; steel products Rs. 25.25 million against Rs. 20.40 million; batteries Rs. 12.90 million against Rs. 10 million; non-ferrous products (other than aluminium) Rs. 24.90 million against Rs. 16.80 million; wire products Rs. 14.15 million against Rs. 11.50 million; electric manufactures Rs. 12 million against Rs. 11 million; airconditioners and refrigerators Rs. 10.55 million against Rs. 4.95 million; wire ropes Rs. 8.90 million against Rs. 6.95 million; ferrous holloware Rs. 8.25 million against Rs. 5.45 million; bright bars and shaftings Rs. 8.20 million against Rs. 5.65 million and miscellaneous manufactured articles Rs. 32 million against Rs. 29.80 million.

Export value of the items of less overseas offtake was : auto and auto parts Rs. 65.95 million against Rs. 69.30 million; electric wires and cables Rs. 53.75 million against Rs. 56.15 million; steel structurals Rs. 28.85 million against Rs. 45.85 million; diesel engines and parts Rs. 21.45 million against Rs. 26.74 million; electric fans and parts Rs. 10.15 million against Rs. 12 million; railway track materials Rs. 0.95 million against Rs. 6.05 million; mechanical pumps Rs. 2.95 million against Rs. 3.45 million and sewing machines Rs. 0.35 million against Rs. 1.55 million.

EXPORT TRADE IN CASHEW KERNELS

Indian export of cashew kernels have been steadily increasing. They picked up from a level of Rs. 151.5 million in 1957-58 to Rs. 685.40 million in 1972-73 and in the first half of 1973-74 (April-September 1973), the export value was over Rs. 462 million. In terms of quantum, the 1972-73 exports stood at 66,065 tonnes while in the first half of 1973-74 they were 34,610 tonnes.

India had maintained a virtual monopoly in the past in meeting world demand of the kernels but while the world trade in cashew increased from 41,578 tonnes in 1960 to 92,168 tonnes in 1971, India's share has been reduced from nearly 95 per cent in 1960 to over 69 per cent in 1971. The emergence of Mozambique, Tanzania andKenya which were traditional suppliers of raw nuts as exporters of cashew kernels and cashewnut shell liquid has affected India's supply position.

U.S.A. constitutes the world's largest market for the kernels, followed by U.S.S.R., East European countries, U.K., Canada and Japan.

Cashew Export Promotion Council, Ernakulam, which is the body to undertake promotional activities of cashew kernel exports in India, has from time to time conducted market surveys and organised visits of sales and study teams abroad. During 1971-72, two such teams were sponsored by the Council, one to Hong Kong, Japan, Thailand and Singapore and the other to Indonesia and Australia. A special promotional programme for popularising Indian cashew in Japan has been drawn up in collaboration with a marketing firm in Japan, M/s. Thoshoku Limited.

Further improvement in India's ability to export the product is considerably tied up with the aspect of procuring adequate quantities of raw cashew nuts. The country's processing capacity is around 4,000 tonnes of raw nuts and the indigenous production which was available to the processing units never exceeded beyond 80,000 tonnes in the best year of the crop. The industry has been thus depending upon imports of raw nuts from Tanzania, Kenya and Mozambique as well as other African countries. During 1972-73, the country's import quantum was of the order of 187,940 tonnes. It has been the policy of African Governments including Tanzania, Kenya and Mozambique to set up mechanised factories to process the raw nuts produced in their countries. Some medium sized units have already been in operation and in the course of next few years, large capacity units with sophisticated machinery are likely to be set up. This has prompted the Government of India to improve the raw cashew production within the country.

The strategy for cashew development keeps in view the twin objective of placing new areas under cashew and increasing yields per unit area from the existing plantations through the adoption of improved package practices. A crash programme for developing the plantation area in the forestry sector has been taken up using budding methods on high yielding mother plants.

In the Fifth Five-Year Plan, beginning 1974-75, it is proposed to increase additional production of raw cashew by about 72,000 tonnes. The strategy for cashew development during the plan period centres around the establishment of Cashew Development Corporations in principal cashew growing States in order to institutionalise the development of cashew cultivation in forest areas.

Till September, 1970, raw cashew imports were allowed by individuals under Open General Licence. Since then, the Government of India canalised the imports through Cashew Corporation of India. During the current import trade control policy (for 1973-74), the available quantity of imported raw cashew is being distributed by the Cashew Corporation to eligible actual users viz. those processers who have participated in the import and export trade of cashew and operated cashew processing factories in any of the years since 1968.

OVERSEAS DEMAND FOR HANDKERCHIEFS

Of a variety of clothing accessories and cotton manufactures exported, handkerchiefs have come to occupy a significant place in recent years. During 1972-73, foreign exchange earning from this single item alone was as much as Rs. 47 million which registered significant increase over the export value in the preceding year at Rs. 39 million.

During 1972-73, Real Madras Coloured handkerchiefs constituted the most popular veriety sought by foreign buyers. Nearly two dozen countries imported this variety at a cost of Rs. 35.75 million which accounted for more than 76 per cent of the entire export value earned from handkerchiefs in the year.

Dahomy Republic was the foremost buyer during the year which alone bought worth Rs. 12.75 million. Sierra Leone was the next important market, having purchased worth Rs. 8.48 million. Nigeria which was the third biggest importing country, imported worth Rs. 8.25 million. Among other countries, Liberia, U.K., U.S.A. and Bangladesh were prominent.

In 1971-72, the exports of this variety secured foreign exchange at Rs. 29.50 million. Nigeria with purchases valued at Rs. 10.32 million topped the list of buying countries, followed by Dahomy Republic at Rs. 7.20 million, Sierra Leone at Rs. 6.85 million, Liberia at Rs. 2.19 million and U.K. at Rs. 1.55 million.

During 1972-73, apart from Madras Coloured handkerchiefs, Arab Roomals and other handkerchiefs were also exported to fetch Rs. 0.26 million and Rs. 10.70 million respectively as against Rs. 0.33 million and Rs. 8.80 million in 1971-72.

During 1972-73, these were mainly purchased by U.S.S.R., U.K., Sweden, Federal Republic of Germany, Belgium and Afghanistan while during 1971-72, U.S.S.R. and U.K. were the principal importers.

EXPORT POSITION OF TYRES AND TUBES

Indian exports of tyres and tubes amounted to over Rs. 57 million during 1972-73. Of the export turnover, tyres of various types accounted for Rs. 52.35 million while the share of tubes was of the order of Rs. 3.88 million.

Variety-wise, the export composition during 1972-73 was : tyres for trucks and buses Rs. 38.85 million; cycle tyres Rs. 4.90 million; tyres for off-the-road vehicles Rs. 4.75 million; motor tyres Rs. 2.10 million and tractor tyres Rs. 1.20 million. Aside from these principal varieties, tyres flaps (Rs. 1.27 million), tyres for other vehicles (Rs. 2.33 million) and solid rubber tyres were also exported.

In the area of tubes, the largest variety exported during the year pertained to tubes for trucks and buses. It fetched as much as Rs. 2.38 million as compared to Rs. 4.5 million in 1971-72. Cycle tubes was the second important variety which secured Rs. 1.80 million against Rs. 2.25 million. Motor tubes, off-the-road vehicle tubes, tractor tubes, tubes for motorcycles and tubes for other vehicles also figured in exports during the year.

Yugoslavia, Czechoslovakia, Iraq, Korea Republic, Kuwait, U.K., Sudan, U.S.A., Bangladesh and Guyana were the prominent markets for tyres while U.S.A., Czechoslovakia, Yugoslavia, Iraq, Sudan, U.S.S.R., Afghanistan, Peru, Austria and Puerto Rico were the leading purchasing countries for tubes.

In the organised sector, during 1972 there were 8 units engaged in the production of giant tyres with an installed capacity of 2.20 million numbers and their production was estimated at 2.40 million numbers while in the production of giant tubes, the same number of units with the same installed capacity (2.20 million numbers) produced 2.30 million numbers. In the area of motor tyres and tubes manufacture, there were 8 units engaged in the each line of manufacture during the year and as against their installed capacity of 1 million numbers (each for tyres and tubes), their production during the year was respectively 1.30 million numbers and 1.40 million numbers.

In respect of other varieties of tyres and tubes, the details of number of units, installed capacity and actual production during 1972 were : 5 units, 200,000 numbers and 150,000 numbers for motorcycle tyres; 5 units, 200,000 numbers and 225,000 numbers for motorcycle tubes; 15 units, 31.80 million numbers and 22.40 million numbers for bicycle tyres; 16 units, 28.95 million numbers and 14.60 million numbers for bicycle tubes; 8 units, 450,000 numbers and 500,000 numbers for scooter tyres and 6 units, 450,000 numbers and 380,000 numbers for scooter tubes.

TRENDS IN TEA EXPORTS

India's exports of tea during the first seven months of 1973 (January-July, 1973) are estimated at 88.62 million kgs. at a cost of Rs. 677.30 million, according to the Tea Board, Calcutta. In the corresponding period of the preceding year (January-July, 1972), the exports were of the order of 96.70 million kgs. valued at Rs. 723.60 million while in the same period of 1971, 86.31 million kgs. were supplied to earn Rs. 648.20 million in foreign exchange.

The price realisation per kg. in the period January-July 1973 was of the order of Rs. 7.64 as compared to Rs. 7.48 and Rs. 7.51 in the same period of 1972 and 1971 respectively.

During 1972-73, India's exports of tea and mate earned foreign exchange at a value of Rs. 1472.95 million as compared to Rs. 1563.15 million in 1971-72.

Black tea constituted the largest single variety for the bulk of foreign exchange earning. It fetched Rs. 1333.55 million. U.K., U.S.S.R., Netherlands, Arab Republic of Egypt, Ireland, Federal Republic of Germany, U.S.A., Afghanistan and Sudan were the principal importers.

Black tea in packets, the next important variety, earned Rs. 89.50 million and was mainly bought by Afghanistan, Sudan, Dubai, Nepal, Qatar, Bahrein Islands, Jordan and Iraq.

Black tea (dust) and green tea were also exported during the year to secure Rs. 29.70 million and Rs. 20.15 million respectively. Afghanistan, Arab Republic of Egypt and Dubai were the leading markets for the black tea (dust) while Afghanistan, Japan and U.S.A. were the principal buyers of green tea.

PERFORMANCE AND POLICY OF OILCAKE EXPORTS

India's export trade in oilcakes has registered a sharp increase during 1972-73 to reach the level of Rs. 744.70 million (1 million tonnes) as compared to Rs. 401.50 million (0.74 million tonnes) during 1971-72.

Solvent extracted groundnut oilcake occupies the foremost position in the country's export trade of oilcakes. The groundnut extraction exports earned Rs. 585.20 million (735,275 tonnes) during 1972-73 as against Rs. 340.80 million (603,765 tonnes) in 1971-72. The solvent extracted decorticated cottonseed cake also improved its export performance from Rs. 32 million (63,070 tonnes) in 1971-72 to Rs. 112 million (152,450 tonnes) in the year that followed. The offtake of linseed cake rose from Rs. 10 million to Rs. 20.30 million in the respective years while that of de-oiled rice bran fell marginally from Rs. 30 million (168,980 tonnes) to Rs. 27 million (123,140 tonnes). Exports of compound animal feed have more than doubled in these years from Rs. 5.2 million to Rs. 11.4 milion.

During 1972-73, the major importer of solvent extracted groundnut oilcake was Japan at Rs. 112.24 million, followed by Poland at Rs. 101.85 million, U.S.S.R. Rs. 93.34 million, U.K. Rs. 67.57 million, Czechoslovakia Rs. 52 million and Hungary Rs. 43.45 million.

Cottonseed cake was supplied among others to Bulgaria (Rs. 26 million), Czechoslovakia (Rs. 25 million), Poland (Rs. 17 million), Rumania (Rs. 11 million) and German Democratic Republic (Rs. 12 million).

Netherlands was the most important buyer of solvent extracted linseed oilcakes as well as de-oiled rice bran.

The exports of solvent extracted groundnut cake are canalised through the Groundnut Extractions Export Development Association, Bombay. Although a liberal policy of exports was followed prior to 1972, certain quantitative restrictions had to be imposed during 1973 because the production of oilseeds particularly that of groundnut fell sizeably due to the unprecedented drought and scarcity conditions. In February 1973, it was decided to impose a ceiling of 600,000 tonnes on the export of groundnut extractions during the year 1973. However, the international protein market price became extremely favourable after the failure of the Peruvian fish meal supply and the ban imposed by the United States on the exports of soyabean meal from that country. Consequently, international price of oilcake reached higher proportions and the Government of India raised the ceiling for the year 1973 to 750,000 tonnes. The production of groundnut in the current year is reported to be extremely good and there is likely to be a bumper crop in the year. This might prompt Government to remove the ceiling on the export of groundnut extractions.

BOOST IN RAYON AND SYNTHETIC TEXTILES

Export trade in rayon and Synthetic fabrics and allied items totalled Rs. 160 million during the first ten months of 1973 (January-October 1973), registering 123 per cent increase over the export earning during the corresponding period of the preceding year at Rs. 71.90 million.

The fabrics alone fetched as much as Rs. 126.75 million which registered 107 per cent increase over the value in the same period in 1972 at Rs. 61.10 million. Garments and hosiery, the next important variety, earned Rs. 5.48 million and recorded 123 per cent increase as compared to the export earning at Rs. 2.45 million. Miscellaneous item exports looked up sizeably to a level of Rs. 22.71 million as against Rs. 2.42 million.

Tyrecord yarn and knitwear were, however, the two categories of reduced overseas intake during January-October 1973. The exports of tyre cord yarn came down to Rs. 4.17 million from Rs. 4.83 million while that of knitwear reduced to Rs. 0.92 million from Rs. 1.10 million.

HANDLOOM EXPORTS IMPROVE

India's handloom exports touched a record figure of Rs. 480 million during 1972-73. The favourable trend continued in the first half of 1973-74 (April-September, 1973). In this period, the export value was of the order of Rs. 212 million as against nearly Rs. 207.5 million in the same period of 1972–73. The export growth would have been higher but for a series of unfavourable factors, such as, high prices of the main raw material, namely, cotton yarn, power shortage and increased freight costs.

Of the standard type, cotton handloom fabrics contributed substantially to the export uptrend in the first half of 1973-74 as compared to the same period of the preceding year—Rs. 87.5 million against Rs. 58.9 million. Real Madras handkerchiefs and lunghies and sarongs stood out as the prime areas of export dynamism. The supply of Real Madras handkerchiefs, particularly to the African countries, has been on an encouraging trend for the last two years. The first six months of 1973-74 witnessed an export earning from this category at the level of Rs. 29 million as compared to Rs. 18 million which was secured in the same period of the preceding year. Quantumwise, nearly 7.6 million metres were exported as against 6.2 million metres. Apart from African nations, the exports to U.K. have also shown an increase. The group of lunghies and sarongs netted Rs. 15.6 million against Rs. 11.3 million in the respective periods. With Bangladesh as a new important market and fresh orders from Malaysia and Singapore, cotton handloom lunghies have particularly picked up.

The popular variety, Bleeding Madras, has also witnessed a smart recovery to fetch nearly Rs. 1 million (177,000 metres) as compared to Rs. 340,000 (73,000 metres). Apart from U.S.A., the U.K. and Japan have started importing this fabric on a large scale. The exports of cotton handloom shirtings and other varieties like crepe, seersucker, denim and casement have registered a favourable trend of exports. This group secured Rs. 3.2 million in the first half of 1973-74 as compared to Rs. 2.12 million in the same period of the preceding year.

Cotton handloom made-ups were exported to the tune of Rs. 23.5 million during April-September 1973 as compared to Rs. 35 million in the corresponding period of 1972. The declining trend was due to the fact that there were few enquiries from African markets for carpets and durries and in respect of bedsheets and blankets. Non-settlement of the request to allow imports of towels and bedsheets duty-free had affected supplies to the U.K. market. The performance of pillow covers, table-cloth and napkins has, however, matched up with the trend for the last year.

During the first six months of the year 1973-74, the exports of mulberry silk fabrics have registered a favourable recovery to Rs. 48.20 million as against Rs. 29.50 million. In terms of quantity, the export supplies were 2.53 million sq. metres and 1.88 million sq, metres respectively. Likewise, tasar silk fabrics have also registered uptrend—Rs. 9.3 million as compared to Rs. 5.8 million. The export improvement in the silk items is creditable in view of the increase in the raw silk prices.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

AN OUTLINE OF REFRACTORY INDUSTRY

An important feeder industry wherever heat operation is involved—catering mainly to the needs of steel industry, the refractory industry in India is included in the list of 123 priority industries for which additional capacity is sought to be increased. The industry's installed capacity is of the order of 1.19 million tonnes (during 1972) with 48 manufacturing units active in the line. An additional capacity of 462,000 tonnes was also approved.

The industry has in the past taken advantage of overseas collaboration for technical know-how. It has now acquired the required know-how for general run of refractories and is in a position to impart technology for setting up additional capacity.

Refractory bricks and other construction material are active in the export field. During 1972-73, the foreign exchange earned by this material was of the order of Rs. 2.76 million. Heat insulating bricks and shapes and magnesite bricks and shapes constituted the major items of export. Iran was an important market for the former category while the Arab Republic of Egypt was the chief buyer of the latter. Fire clay bricks and shapes were exported mainly to Bangladesh and Iran. Arab Republic of Egypt again was the principal market for magnesite chrome bricks and shapes. High alumina bricks, silicon carbide bricks and other refractory bricks were also active in the export trade.

Abrasive grain industry has also made good headway in the Indian economy in recent years. The industry's installed capacity is in the neigbourhood of 10,000 tonnes per annum. One of the manufacturing units in the line has produced silicon carbide synthetic abrasive grains for the first time in the country recently. Additional capacity of 15,000 tonnes shared by four producers has also been approved by the Government and is at various stages of implementation. The production of abrasive grains during 1972 was estimated at nearly 5,040 tonnes.

Abrasive grains of alumina base, silicon carbide and other synthetic abrasive grains as well as grinding wheels of synthetic abrasive grains, abrasive cloth and abrasive paper are all active in India's export trade. The grains of silicon carbide which earned Rs. 0.84 million during 1972-73, were mainly supplied to the U.K. market (Rs. 0.72 million). In that year, Thailand was the principal buyer of grinding wheels of synthetic abrasive grains, while Poland was the best market for abrasive paper and Singapore for abrasive cloths.

USE OF UREA IN CATTLE FEEDS

The Experts Technical Committee of the Indian Standards Institution (ISI), responsible for the formulation of national standards in the field among others, of animal feed and feed stuffs, have allowed the incorporation of urea up to a level of 1 per cent with minimum 10 per cent molasses as ingredient in compounded cattle feeds.

The use of urea for feeding live stock was not permitted earlier for want of easily available sources of carbohydrates within the country. Extensive research spread over a number of years has indicated that molasses available in plenty in India can serve as a source of soluble carbohydrates. As such, the product can substitute, to a large extent, the foodgrains which are being used in overseas countries in conjunction with urea for feeding livestock.

The incorporation of urea in cattle feeds is expected to result in reduction of the cost of feeds significantly, without impairing their quality.

LARGEST STEAM TURBINE PRODUCED

The Hardwar unit of M/s. Bharat Heavy Electricals Limited (BHEL), have successfully tested a 200 MW steam turbine which represents the biggest set ever produced by India. The turbine was manufactured by the public sector firm in collaboration with the Soviet Union. So far, the Hardwar unit of BHEL concerned itself with the manufacture of 100 MW sets only. Now India has joined the select group of nations that are producing the 200 MW sets.

The entire set, inclusive of the turbine, the generator, the condensor and the auxiliaries weighs about 1700 tonnes. The turbine alone weighs about 560 tonnes.

The fabrication of this 200 MW set is considered a breakthrough in monitoring technology. The turbo supervising and surveillance monitor is totally indigenous in design and fabrication. Designed by BHEL, it has been made by the Electronics Corporation of India Limited, another Public Sector Undertaking.

M/s. Bharat Heavy Electricals Limited and M/s. Electricals Limited are gearing themselves to meet the power needs of India of over 15 million KW in the Fifth Five-Year Plan.

INDO-CZECH ECONOMIC COOPERATION

A joint Indo-Czechoslovak declaration has been recently signed by the Prime Minister of India and the General Secretary of the Central Committee of the Communist Party of Czechoslovakia and Chairman of the Central Committee at the National Front of the Czechoslovak Socialist Republic. The representatives of the two Governments have also concluded an Economic Cooperation Agreement and a Protocol on Economic, Technical and Scientific Cooperation. A Trade protocol was also signed envisaging the two-way trade to reach the level of Rs. 1500 million in 1974.

Czechoslovakia extended cooperation in setting up development projects in India like Heavy Engineering Corporotion Limited, Ranchi; Bharat Heavy Electricals Limited Tiruchirapalli; Bharat Heavy Plate and Vessels Limited, Visakhapatanam; Machine Tool Corporation of India Limited, Ajmer; Heavy Machine Tools Limited Pinjore and Central Machine Tool Industries, Bangalore. These projects have indeed helped the Indian economy to achieve progress in industrialisation. Currently, Czechoslovakia is cooperating in the setting up of yet other industrial plants including coal-based fertilizer plants at Ramagundam, Talchar and Korba. In the joint declaration, the Indian side expressed its deep appreciation of Czech collaboration in the various industrial projects and the Czech side re-affirmed their continued interest in India's efforts at achieving economic self-reliance especially in the fields of heavy industry, power generation and engineering. Within the framework of the Economic Cooperation Agreement and the Agreement on Scientific and Technological Cooperation and Industrial Cooperation, Czechoslovakia has agreed to participate in further strengthening India's industrial base in the fields of power generation, railway electrification, fertilizer production and engineering.

In the Protocol on Economic, Technical and Scientific Cooperation, the representatives of both the countries laid emphasis on the increasing trade turnover. The volume of two-way trade grew from Rs. 207 million in 1960 to an anticipated Rs. 800 million in 1973. The Protocol underlines the need for a suitable change in the trade pattern to maintain balanced and expanding growth of trade between the two countries. The Indian side expressed the view that exports from India in future should include a greater share of non-traditional items particularly engineering and manufactured goods. It was also decided that both the countries would actively participate in joint ventures in third countries.

In the Trade Protocol for the year 1974 which was signed recently, it was envisaged that besides various traditional commodities like jute manufactures, de-oiled cakes, iron ore, coffee and tobacco from India to Czechoslovakia, a number of non-traditional items including finished leather and leather products, rayon and synthetic fabrics including readymade garments, engineering goods, such as, automobile ancillaries, hand tools and small tools, castings and forgings, alarm clocks and drugs and medicines would be exported from India to Czechoslovakia. Principal items of import from Czechoslovakia during 1974 will include rolled steel products, newsprint, caprolactum, organic and inorganic chemicals, casing pipes and machinery items.

On the question of further scope of mutual industrial collaboration, it was agreed to upgrade the technology in the various schemes and projects started in India with Czech collaboration, particularly in machine tools and tractors and in the Heavy Engineering Corporation Limited. It was agreed to collaborate in the promotion of research and development at the Research and Development Unit of Bharat Heavy Electricals, Hyderabad and to explore possibilities of capacity complimentarities in heavy industries and their utilisation. The Czech side undertook to examine the scope for supplying components, spares and scarce raw materials to meet the requirements of the Czech aided projects and to exchange technical information and the manufacture in India of 500 MW generation sets.

With a view to contributing to the implementation of the plans of economic development in India, the Czech Government extended a credit up to Rs. 800 million for financing the f.o.b. value of purchases in Czechoslovakia of capital goods and components (machinery, industrial equipment and other supplies for the construction and expansion of projects in India).

Currently, Czechoslovakia is India's fourth largest trading partner in the East European countries. The trade turnover between the two countries stood at Rs. 584.20 million in 1972. Exports from India increased from Rs. 316 million in 1968 to Rs. 441 million in 1972. The trade plan of 1973 envisages an increase of trade turnover by 36 per cent over the previous year.

The bulk of India's export to Czechoslovakia consists of traditional items including iron ore, de-oiled cakes, tanned and semi-tanned hides and skins, jute manufactures, tea, coffee, vegetable oils, mica and mica based products, pepper, groundnut HPS, cashew kernels, some types of engineering goods and cotton textiles.

Import from Czechoslovakia includes capital goods, machine tools, components and spares for tractors, organic and inorganic chemicals, rolled steel products, construction and earth-moving equipment, ball and roller bearings, seamless pipes and tubes, diesel generating sets and spares, electrical and electronic instruments and components, motor-cycles and scooter components, printing and polygraphic machinery etc.

The percentage share of India in the global trade of Czechoslovakia was around 1 per cent in 1971. The percentage share of Czechoslovakia in India's global trade with about 1.2 per cent in 1972. It is hoped that the trade will rise significantly during 1973. Items like fruit juices and concentrates, ilmenite, instant coffee, cigarettes and pipe tobacco, ferro-manganese, paints, pigments, varnishes, lacquers, cinematographic films and a wide range of engineering products have good market in Czechoslovakia and these items can be exported from the country in future.

Emphasis has been laid on the increase of export of non-traditional items to the countries of East Europe. The export of engineering goods from India to Czechoslovakia included items like iron castings, hand tools and small tools, sanitary and water fittings, textile machinery, auto-parts, gramophone records. chemical products etc. The value of export of engineering goods to Czechoslovakia increased from Rs. 11.53 million to Rs. 13.36 million in 1971 to Rs. 24.39 million in 1972. Products like domestic knitting machines, sanitary fittings, locks and padlocks, cutlery, castings and forgings, simple machine tools like slotting and cutting machines, transistor radios, dry battery cells, flouroscent lights, gramophone records, builders' hardware and handlooms etc. have also a good market potential in Czechoslovakia.

Czechoslovakia extended economic credits worth Rs. 9620 million to India. The first credit was for Rs. 332 million. The second economic credit was of the order of Rs. 630 million, while the third credit is estimated to be about Rs. 800 million, out of which Rs. 300 million will be made available for the import of components.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

DEVELOPMENT OF PRESERVATIVE OILS

The Defence Research Laboratory (Materials), Kanpur, has successfully developed two preservatives, namely, Corroban-340 and Corrostop-391.

'Corroban-340', a high viscosity mineral oil fortified with corrosion inhibitors, is suitable for long term (2 years) preservation (under normal storage conditions) of ferrous components, spares for light and heavy machinery, engineering goods, conduit pipes, rods, shafts and artillery equipment against atmospheric corrosion in industrial humid and subtropical hot and humid conditions.

The above item is also a good sealing coat and preservative for phosphated surfaces/components for automobile bodies and other ferrous components in marine hot and humid atmospheres for short term preservation before these are painted.

'Corrostop-391' is effective in preventing corrosion of ferrous components during fabrication, transportation from one shed to another. 'Corrostop-391' can also be used for short term preservation (varying from 10-30 days) in the various shops for inspection of fabricated stores by appropriate authorities before they are passed on to the next stage of finish/assembly. 'Corrostop-391' leaves a thin film of protective coating on the components which does not interfere with the inspection.

The application is simple and involves only the immersion of metal parts in the developed oils after de-greasing and drying.

Constituents for both the preservatives developed are available indigenously.

The demand is expected to increase considerably because of the excellent preservative properties of the developed oils.

The machinery required for the manufacture of both the stores are electric stirrer, 200 litres or more capacity mild steel/stainless steel drums for mixing, physical balance and measuring cylinder (1 litre capacity).

THERMOSTATIC CONTROLLER

The Regional Research Laboratory (RRL), Jorhat, has developed thermostatic controller which is used for controlling temperatures.

Temperature controllers find extensive application starting from a small kitchen gadget to big process control systems. There are several types and makes of thermostatic controllers. The one developed by RRL is a simple, battery-operated and sophisticated transistorised unit. The special feature of this controller is that the sensing element is a transistor.

The newly developed temperature controller consists of four transistors and an electromagnetic relay. The controller can be used for controlling temperatures up to 60°C. For higher temperatures, suitable transistors can also be used. A prototype has been made by RRL and found to work satisfactorily.

The main items of raw materials required for the development of thermostatic controllers are transistors and electromagnetic relay battery. The main items of equipment required include testing tools, such as, Avo meter.

CABLE JOINTING KIT DEVELOPED

A complete range of Tropolin Cable Jointing Accessories has recently been developed by M/s. Siemens India Ltd., 134A, Dr. A. B. Road, Worli, Bombay-18. These are based on cold setting casting resin and facilitate easy, quick and reliable jointing and termination of cables for rated voltages upto 11 KV.

A complete set of accessories required for making a cable joint or end termination is neatly packed in a carton to make it a handy jointing kit. In striking contrast to cast iron boxes used with hot pouring bitumen base compound, Tropolin kits are very simple, compact and easy to use. Heating of compound is not necessary.

Tropolin Cable fittings have many advantages. It is smaller in dimension and very easy to instal even in cramped space conditions. It is insensitive to atmospheric and chemical influences. It has a very high electrical and mechanical strength and has a high short-circuit withstand capacity.

Tropolin is a neat jointing system which lasts as long as the cable.

INDIA'S EXPORT TRADE– QUALITY CONTROL AND PRE–SHIPMENT INSPECTION

With a view to assure overseas importers of competitive quality of export wares, the Government of India enacted as early as 1963, the Export (Quality Control and Inspection) Act which came into effect from January 1964. The Act empowers the Government to notify commodities to be brought under compulsory quality control and pre-shipment inspection. Once a commodity is so notified, it cannot be exported unless it is accompanied by a certificate of export-worthiness issued by an Export Inspection Agency recognised for the purpose by the Government of India under the Act. While notifying a commodity under the Act, the Government prescribes standards for the commodity, below which goods cannot be declared export–worthy. Also a procedure is laid down for exercising quality control and methods of test at the time of pre-shipment inspection of goods. The certificate of export–worthiness may be in the form of a document or a recognised mark, such as, EIC (Export Inspection Council) mark or Agmark for Agricultural products or ISI (Indian Standards Institution) certification mark. The presence of these marks which are recognised under the above Act either on a bale or a package or on the signode seal joining the two ends of the baling straps indicate export–worthiness of the consignment.

So far, a very large number of commodities ranging from raw agricultural products and minerals, to semi-finished and finished products in different industrial areas have been brought under the purview of the Act.

In the formulation of standards for export, not only the industry and trade within the country is consulted but special note is taken of the national standards abroad framed by their National Standards Bodies. In respect of food products, the criteria adopted by the Codox Alimentarius Commission which is a joint commission of World Health Organisation and Food and Agricultural Organisation of the United Nations are also kept in view. Primary consideration is accorded while determining the export-worthiness of a consignment to the contractual specifications agreed to between the buyer and the seller provided these specifications are not detrimental to India's reputation. In certain cases, foreign importers might be willing to buy indifferent quality material by mutual understanding but the minimum specifications laid down under the Act are strictly adhered to and sub-standard goods are not allowed to be exported.

In the agricultural and food products group, there are 48 items which have been so far covered under the Compulsory Quality Control and Pre-shipment Inspection Scheme. This list includes Sann hemp, unmanufactured tobacco, fruit and vegetable products, bristles, raw wool, lemongrass oil, sandalwood oil, goat hair, bidi tobacco, palmarosa oil, myrobalan, cardamom, chillies, black pepper, vetiver oil, walnuts, castor oil, safflower refined oil, cottonseed refined oil, linseed refined oil, groundnut oil, hydrogenated vegetable oils, animal casings, canned in brine or dry packed and frozen prawns, frozen frog legs, ginger, turmeric, tendu leaves, onions, garlic, table potatoes, pulses, cashew kernels, de-oiled rice bran, gum karaya, dried fish, prawns, shark fins and fish maws, coriander, fennel seed, fenugreek seed, celery seed, frozen lobster tails, curry powder and cumin seed.

In the minerals and ores group, the products covered under the Scheme include manganese ore, iron ore,

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ferro-manganese including ferro-manganese slag, bauxite including calcined bauxite, manganese dioxide, chrome ore including concentrates, kyanite, sillimanite, zinc ores including concentrates, magnesite including dead-burnt and canclined magnesite, barytes, red oxide, yellow ochre, steatite, felspar and mica.

Items covered in the organic chemicals group are acetic acid, hydroquinone, oxalic acid, naphthalene, benzene, anthracene, toluene, ethyl alcohol, xylene and sodium citrate.

The inorganic chemicals group includes sodium dichromate, sodium sulphate, sulphuric acid (technical grade and battery grade-concentrated and dilute, pure and analytical, re-agent grades), hydrogen peroxide, manganese dioxide (other than natural), hydrochloric acid, copper sulphate, ferric alum, sodium carbonate, aluminium sulphate (non-ferric), ammonium chloride, potassium dichromate, manganese sulphate, mercuric oxide, sodium bicarbonate, alumino ferric, aluminium chloride, barium chloride, calcium carbonate, potassium permanganate, zinc sulphate, ammonium alum and potash alum.

Rubber products group includes gloves of all kinds-ice bags, hot water bottles, belts, V'belts, fan belts, hoses, and beltings. Inorganic pigments group includes zinc oxide, red lead and white lead.

Refractories group include fireclay refractory bricks, basic refractory bricks, acid-resisting refractory bricks, silica refractory bricks, sillimanite bricks and high alumina bricks.

Other items under the Scheme are laundry soap, P.V.C. leather cloth, safety glass, pesticides and their formulations, paints and allied products, vacuum flasks, vinyl film and sheeting, ceramic products, linoleum, engineering products, textiles, coir mats and mattings, coir yarn (baled and non-baled) and footwear.

Under the Export (Quality Control and Inspection) Act, the Export Inspection Council was established. The Council is the apex body for controlling all activities of compulsory quality control and pre-shipment inspection of all export goods including jute and coir products but excepting textiles, such as, cotton, silk, synthetics and woollen. The work of inspection of textiles including knitted garments is organised by the Textiles Committee, Bombay.

The awareness in the importing countries about the various measures taken by the Government of India to ensure quality of its export products would, it is hoped, create confidence among their buyers not only in the products being sold by India but also in the system followed by the Government for ensuring quality. ☐

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INDIA PROVIDES CONSULTANCY SERVICES ABROAD

Although a late entrant in the arena of industrialisation, the Indian economy has acquired sufficient technical know-how in several manufacturing fields and is even in a position to lend its consultancy services for industrial development overseas. Among the organisations which have already set a record in providing such services to other countries, M/s. National Industrial Development Corporation Limited (NIDC) deserves mention. The Corporation earned nearly Rs. 8.7 million during 1972 for the consultancy services it had already provided and the foreign exchange earning in the year amounted to Rs. 0.78 million.

Among the notable achievements of the Corporation in the consultancy area were the conclusion of a five-year collaboration agreement with Tanzania for providing consultancy to the National Development Corporation of that country, the preparation of feasibility studies for a number of important projects including jute, paper and sugar industries of the Nepal Industrial Development Corporation and the successful completion of a long range Capital Goods Planning Study in Iran for certain industries specified by the United Nations Industrial Development Organisation.

A steel melting and billet casting plant is being established at Tripoli (Libya) for which the company has been acting as the overall consultants. Most of the design work in that plant has been completed and NIDC rendered advice on the various tenders floated for major equipment and several engineering works. This project is expected to be commissioned in the middle of 1974.

NIDC also undertook a detailed assignment of the demand for pulp and paper machinery as against the existing capacities in India on behalf of M/s. Combustion Engineering, U.S.A.

The Corporation organised a comprehensive survey of the Gulf States of Oman, United Arab Emirates, Qatar, Bahrein Islands and Kuwait, at the instance of the Government of India. The Indian Government appointed the company to undertake an industrial survey of the States of Negri Sembilan in Malaysia.

Following the five-year collaboration agreement with the National Development Corporation of Tanzania, the Indian company was entrusted with five studies, namely, feasibility study for machine tools plant, diversification study for steel rolling mill, study of the working of the National Steel Corporation Limited, feasibility study for setting up of agricultural machinery and farm implements and assessment of steel distribution systems in Tanzania.

In addition to the assignments abroad, the Corporation has successfully undertaken several consultancy assignments within India too. The company has been acting as a turnkey consultant for a 100 tonne per day pulp and paper plant being set up in Nagaland. The National Mineral Development Corporation is setting up the Bailadilla Iron Ore Deposit (No. 5) with the assistance of NIDC. The design work of this project which envisages the process and transportation of about 6 million tonnes of iron ore per year is almost complete; the project is expected to be completed for trial runs by mid-1975. NIDC's expertise was also sought by M/s. Bharat Pumps and Compressors Limited for setting up a plant near Allahabad. Design work relating to the first phase of the plant has been completed. The same manufacturer of pumps and compressors sought NIDC's help in detailed designing and finalising collaboration arrangements for establishing a high pressure gas cylinder plant, again near Allahabad for the manufacture of industrial gas cylinders, medical gas cylinders and hallow tubular bodies. The Corporation was also appointed to provide consultancy services in respect of civil works of a new cable factory at Hyderabad being set up by M/s. Hindustan Cables Limited.

In view of the growing importance of air traffic in India, the National Industrial Development Corporation Limited succeeded in developing specialised knowledge in the area and it was appointed to provide complete consultancy services for the setting up of the new international terminal module at Palam Airport, New Delhi, first of the major airport to be constructed by the International Airport Authority of India.

The Corporation undertakes a constant review of the new areas of industrial diversification to provide the necessary consultancy services. Among such areas of specialisation, the company has plans to fully equip itself in the coming years are pulp and paper technology, airport design, bulk material handling and environment engineering.

FROM RADIO TO QUADRAPHONIC AMPLIFIERS

An extensive and highly labour intensive and export oriented industry, tele-communication apparatus–radio broadcast receivers, transistor radios, microphones, loudspeakers, amplifiers, wireless reception

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apparatus and television receivers is making rapid strides in production as well as in exports. The industry is securing foreign exchange in growing volume. The year 1972-73 witnessed the industry's exports amounting to about Rs. 30 million as against Rs. 29 million in the year 1971-72. In the preceding year, the exports were within the vicinity of Rs. 27 million. The industry has thus shown a steady and healthy trend.

In India, the biggest factor contributing to the growth of radio receiver industry has been the expansion of broadcasting system. This particular industry got its impetus in 1947, the year of India's independence. To-day there are many large and small scale units producing radio receivers and allied products.

The contribution of M/s. Murphy India Limited, Dr. Shirodkar Road, Parel, Bombay-12, who manufacture a whole range of radio receivers and allied products deserves mention in this context. Their range includes everything from a small inexpensive single bander to the '2401'—a 9 band portable stereo set that can play either on batteries or on mains.

The Company has collaboration with M/s. Murphy Radio Ltd. of England. It started its operation with a limited capital and capacity to assemble 5000 radios a year. It has achieved now an annual turnover of over Rs. 70 million and an export value of over Rs. 4 million worth of goods annually to 24 countries worldwide. In addition to exporting products from the Indian range, Murphy designs and manufactures to exclusive export requirements.

As far back as 1958, Murphy India Limited started a Research and Development unit of their own with a view to develop indigenous designs, product innovation and improvement, as also to encourage contractors who supply components and seek reduction and replacement of imported components.

India's total production of radio receivers in the year 1972 was in the neighbourhood of Rs. 2 million sets. In fact, the production rose to this level from only 0.27 million sets in 1961. Production of transistors and diodes, carbon film resistors, potentiometers, ceramic capacitors, plastic film capacitors and electrolytic capacitors registered improvement during 1972 as compared to the preceding year.

EXPORT TRADE IN INSTRUMENTATION

The value of India's exports of scientific, medical, optical, measuring and controlling instruments was of the order of Rs. 33.25 million in 1972-73 as against Rs. 16.50 million in 1971-72. The major destinations during 1972-73 were U.S.S.R., U.S.A., Zambia, France, Venezuela, Nigeria, Thailand and Malaysia.

M/s. Instrumentation Limited, Kota (Rajasthan), have acquired experience to provide modern measurement and control instrumentation on turn-key basis to process plants, such as, steel, chemical, petro-chemical, fertiliser, thermal and atmoic power stations. The products of the firm are sought by a large number of industrial units within India and abroad.

The company has today an order position of over Rs. 250 million for turn-key provisions of instrumentation for major process plants apart from orders in retail. Additionally, it exports its products to West Asian and South East Asian countries.

National Electricity Board, Government of Malaysia, have recently selected the Kota firm for the award of a contract of substantial value on the basis of global tender. The contract provides for design, supply, installation and commissioning of instrumentation schemes on a turn-key basis for a thermal power plant. The value of the order is more than Rs. 15 million.

The firm keeps international standards in forefront in its manufacturing operations. Its specialists take into account the future trends in instrumentation so that the buyer has the benefit of modernisation with minimum additional investment including the use of computers.

The range of instruments production in India covers industrial process control instruments, scientific and surveying instruments, X-ray and electro-medical equipment, photographic and photo copying instruments, house service meters, water meters, electrical measuring, integerating, recording instruments and electrical contacts.

In the country's organised sector, the production of industrial process control instruments alone was to the tune of Rs. 8.12 million in the year 1972 for an installed capacity of Rs. 13.75 million spread over 9 units. The production value was Rs. 7.37 million in the preceding year. The output of scientific and surveying instruments rose to Rs. 4.45 million in 1972 for an installed capacity of Rs. 3.84 million by 12 units as against Rs. 3.75 million for an installed capacity of Rs. 2.3 million by 12 units in the preceding year.

STEEL PIPES AND TUBES EXPORT UP

Surpassing the export turnover of Rs. 12 million during the entire year of 1972-73, M/s. Bharat Steel Tubes Limited, 14-15, Connaught Place, New Delhi brought in a sizeable amount of over Rs. 18 million even during the first half of 1973-74 (April-September, 1973). The firm mainly exports steel tubes and pipes, both of black and galvanised variety. Tubes and pipes manufactured by the firm are sought by a well diversified range of markets abroad in which U.S.A. is prominent.

In the field of tube technology, the firm has achieved a competence to provide technical know-how and engineering services at home and abroad. The firm, in fact, is hopeful of entering into agreements with Sudan and Syria for providing technical know-how and engineering services for setting up tube mills in these countries. The negotiations in this respect are underway.

Steel tubes and pipes of the firm have wide applications because of their varying sizes and diametres. These mainly cater to the requirements of gas, water, steam, oil and petroleum fields. Apart from these main manufactures, the firm is progressively diversifying to undertake new lines of manufactures; recently it has secured a letter of intent to manufacture forged hand tools at an installed capacity of 5000 tonnes per annum. The firm has plans to establish a project in Maharashtra for manufacture of these tools.

India's exports of steel tubes pipes and fittings during 1972-73 secured foreign exchange at a value of Rs. 111.80 million as compared to Rs. 108 million in 1971-72.

During 1972-73, galvanised tubes and pipes (Rs. 56.66 million), non-galvanised tubes and pipes of iron and steel (Rs. 14.27 million) and tubes, pipes and fittings of galvanised variety (Rs. 12.35 million) were the principal varieties supplied abroad. U.S.S.R., U.S.A., Saudi Arabia, Australia, Jordan, Bangladesh, Sudan and Kuwait were the leading customers.

An installed capacity of 0.60 million tonnes for black and galvanised tubes (1971) was spread over among 14 units in the line and the production during 1971-72 was of the order of nearly 0.22 million tonnes. Apart from this principal category, the industry also manufactures E.R.W. tubes and seamless tubes.

INDIAN COTTON FABRICS POPULAR OVERSEAS

Registering an increase of nearly Rs. 267 million (26.70 per cent) during 1972-73, India's exports of cotton manufactures (excluding yarn, thread and clothing) reached a level of Rs. 1267 million as compared to Rs. 1000 million during 1971-72.

A wide variety of manufactures made from cotton were supplied overseas during 1972-73. Among these, sarees, lungies, shirtings, dhoties, handkerchiefs, mill-made piecegoods, bedtickings, canvas carded yarn and combed yarn, drill and denim, furnishing cloth, long cloth, poplin broadcloth, sheeting, carded yarn and combed yarn, twill satin, card yarn, umbrella cloth, flannelitte, mulls, voils, domestic bed-tickings, coating, suiting, newar, ribbons, embroidered cloth of mill-made cotton, imitation leather cloth, cotton fabrics coated with artificial plastic materials, insulated tapes, cardage cable rope twine of cotton, made up articles wholly or chiefly of cotton, tarpaulin tents, handloom rugs, mill-made cotton-waste blankets, bed sheets of various types, powerloom counterpanes, handloom napkins, pillow cases, table cloth covers, towels of handloom and powerloom, cotton bedliner, curtains, mosquito nets, handloom durries and carpets and a comprehensive range of other unspecified items in the line, were significant.

U.S.S.R., U.S.A., Yugoslavia, France, Bangladesh, U.K., Kuwait, Canada, Singapore, Sweden, Dubai, Mauritius, Denmark, Federal Republic of Germany, Saudi Arabia, Zambia, Uganda, Nigeria and Poland, were the leading markets during 1972-73.

M/s. New Shorrock Spinning and Manufacturing Company Limited, Asarwa Road, Admedabad-16, exported cotton textiles to the tune of Rs. 13.80 million during the 15 months period ending June, 1973. Their products are imported by a large number of markets abroad which include the developed ones. Bangladesh is a new addition to their list of export destinations. They are engaged in textile manufacturing and processing since 1913. Their production range broadly covers bleached dhoties, shirtings, coatings, longcloths, mulls, voils, crepes, poplins and sarees. They also undertake bleaching, dyeing, calendering, mercerising, finishing and sanforising and yarn dyeing. Their manufacturing plant is located at Nadiad, Kaira District, Gujarat.

Presently, they are engaged in implementing their modernisation programme in the spinning and weaving departments of the textiles mills. Only recently, they have completed their modernisation activities in respect of their centralised process house at Nadiad. They have also installed an imported rotary screen printing machine for sophisticated fabrics which has been commissioned during the period under review.

As in July, 1972, there were 648 mills in the textile sector of Indian economy comprising 394 spinning mills and 290 composite mills. Of the total installed capacity of both the categories of mills at 18.31 million spindles on the date mentioned above, the spinning mills accounted for 6.06 million spindles while the share of the composite mills was of the order of 12.25 million spindles. In terms of loomage, the composite mills had 207,800 looms. During the year 1971-72 (July 1971 to June 1972), 14 new mills started functioning in spinning sector while a composite mill was converted into spinning mill.

The total production of cotton cloth by both the categories of the mills and decentralised sector during 1971 was of the order of 7356 million metres, comprising 3957 million metres by mill sector and 3399 million metres by decentralised sector. In the first half of 1972 (January-June 1972), the total production of cloth was of the order of 3950 million metres (2094 million metres by mill sector and 1856 million metres by decentralised sector) which was higher as compared to the production in the corresponding period of the preceding year (January-June 1971) at 3583 million metres.

CHEWING GUM ON EXPORT STREAM

The recent years have witnessed India offering a comprehensive range of new products, particularly of non-traditional nature to the markets world over. Even confectionery items produced in the country have come to contribute significantly to its export trade.

M/s. National Products, 135. Kaval Byrasandra, Bangalore-6, (Karnataka), have recently secured a contract from Bulgaria for supply of 50 tonnes of chewing gum and bubble gum to that country. The firm has on hand several firm enquiries for these products. They are hopeful of stepping up their export turnover to the tune of over Rs. 2 million per annum, as soon as their production capacity is augumented.

Earlier, one more Indian firm, M/s. Warner Hindustan, Warangal Road, Uppal, Hyderabad, Andhra Pradesh, had secured export orders from Czechoslovakia and Nigeria, both amounting to

Rs. 500,000 for the supply of chewing gum to these countries. This firm is also hopeful of receiving fresh orders from a number of countries abroad for the product.

India-manufactured confectionery and other sugar preparations are picking up overseas demand in growing volume from year to year. The export range includes sweetmeat, flavoured or coloured sugar syrup molasses and chocolate confectionery. U. K., Sudan, Malaysia, Nepal, Dubai, Kenya, Kuwait, Muscat and Behrein Islands are the principal destinations.

EXPORT PERFORMANCE AND POTENTIAL

TRADE STRATEGY WITH EAST EUROPE OUTLINED

Referring to the visits of the Soviet and Czechoslovak leaders, India's Commerce Minister, Prof. D. P. Chattopadhyaya, has recently stated that the entire gamut of trade, economic and political relations of India with these countries has come to be strengthened further. The Indo-Soviet trade is sought to grow to a record 50 per cent to 100 per cent increase by 1980. "A similar tempo of growth should also be maintained in our trade with the other socialist countries". Closer links of economic, scientific and technical cooperation that are now endeavoured to be forged would make India and East Europe complementary rather than competitive. India has set up Joint Commissions on technical, scientific and economic cooperation with socialist countries like U.S.S.R., Poland and Czechoslovakia and these experiments might be extended to other socialist countries in the near future. The new understanding reached with the socialist world, besides providing a sound industrial and economic base to India is expected to contribute to the substantial expansion of capacities in steel plants, oil refineries and the engineering complex in India, the Minister stated.

The two-way trade between India and the East European countries has increased from Rs. 86 million in 1953 to Rs. 6185 million in 1972, the U. S. S. R., accounting for more than 50 per cent with a turnover of Rs. 3677 million. The Soviet Union has emerged as the second largest trading partner of India in the world and the biggest buyer of Indian goods to whom exports in 1972-73 were of the order of Rs. 3054 million. The share of East Europe in India's exports increased from less than 1 per cent in 1953-54 to more than 21 per cent in 1971-72.

Referring to the changing pattern of trade, the Minister said that with the growth of industrialisation, the import and export structure of India have undergone considerable transformation. To start with, imports of capital goods, machinery, plants and industrial raw materials and exports of traditional goods and semi-manufactured products contributed towards the initial needs of India's economic development. With a gradual industrialisation achieved in the country, the range of her exports has changed accordingly. India would now like to promote her exports of engineering products and manufactured items to East Europe as well as to the rest of the world so that the share of non-traditional goods would steadily increase in her global export. At the same time the present level of traditional commodity supplies is also sought to be maintained to the maximum extent possible. It is the country's endeavour to step up the production of these commodities so that their export increases not only to East Europe but to other foreign markets also. As regards import trade, the emphasis is shifting from capital goods to items like crude oil, kerosene, sulphur, steel, non-ferrous metal, newsprint and fertilizers and other industrial raw materials as also ships and shipping equipment and oil prospecting equipment.

That the pattern of India's trade, which had been imposed on her by the structure of the colonial economy needs to be transformed needs on emphasis and the bilateral trade arrangements with East European countries constitute a good beginning in this direction, the Minister noted.

EXPORT TRADE IN FINISHED LEATHER PRODUCTS

The value of finished leather and leather goods exported from India touched a record level of Rs. 236.20 million during 1972-73. It was only of the order of Rs. 62 million in 1971-72 and about Rs. 33 million in 1970-71.

With a view to promoting export trade in finished leather products, the Government of India have devised measures to restrict the export of unfinished or semi-finished leather. Exports of all types of raw hides and skins have been banned. Exports of semi-tanned hides and skins have been canalised through the State Trading Corporation of India effective from December 14, 1972. Quantitative restrictions have also been placed on the overseas supply of semi-processed hides and skins under a quota scheme operative from August 1, 1973. Exports of these items are to be progressively reduced over a period of five years. It is expected that by the end of 1978-79, exports of semi-tanned hides and skins would be brought down to 25 per cent of the level of exports made during 1971-72. Also a uniform 10 per cent duty has been levied on the export of E. I. tanned and chrome tanned hides and skins.

To facilitate the development of infrastructure for export of finished leather and leather goods, the Government have taken certain positive steps. Manufacturers of semi-processed hides and skins are permitted to instal capacity to manufacture finished leather to the full extent of their semi-processed capacity without having to obtain licences for the purpose. New units for the manufacture of finished leather and leather manufactures are also being allowed to be set up from the stage of semi-processed hides and skins. A provision has been made for the import of machinery and tools for balancing, modernisation, expansion to the extent of two-thirds of import replenishment which is allowed against export of semi-tanned hides and skins.

Under the current import licensing policy (1973-74) the leather industry receives preferential treatment in the matter of importing not only equipment but chemicals and dyes too which are not available in the country.

CIGARETTES TO OVERSEAS MARKETS

India has nearly Rs. 17 million export market in cigarettes a year (1972-73). The Soviet Union accounts for the major share. In view of the self-sufficiency in indigenous production and exportable surplus, import of cigarettes for commercial purposes are not allowed into India.

As compared to an export value of Rs. 0.27 million (28,700 kg) in 1969-70, foreign exchange earning from cigarettes revealed an ever rising graph, in the subsequent years. The export value was of the order of Rs. 3 million in 1970-71 (186,800 kg.), Rs. 15.7 million (1.18 million kg.) in 1971-72 and Rs. 16.75 million (1.07 million kg.) in 1972-73.

The Soviet Union improved its share from Rs. 2.9 million in 1970-71, Rs. 14.97 million in 1971-72 and Rs. 16.06 million in 1972-73. Hungary has been the next best market at Rs. 0.64 million during 1972-73 and Rs. 0.52 million in the preceding year. Bahrein Islands, Nepal, U.K., Kuwait and Sechelles were the other important importers during 1972-73. Japan, Kuwait, Saudi Arabia, Mauritius, Yugoslavia and Japan figured in the list of imports in the earlier years.

QUALITY CONTROL FOR ENGINEERING EXPORTS

The Government of India operates a comprehensive system of quality control and preshipment inspection for the sound development of the country's export trade. About 60 engineering products have been covered under the purview of the scheme so far. The important engineering items that have been covered under the scheme are electric cables and conductors, automobile components, diesel engines, steel tubes, bicycle and transmission line towers.

In addition to the 60 products enlisted under the scheme, manufacturing units of nine engineering categories are required to have adequate levels of in-process quality controls. These nine groups relate to diesel engines, power driven pumps, sewing machines, electric fans, automobile components, small tools and handtools, bicycles and parts, steel tubes and tubulars and transmission line towers. Under this system, the concerned manufacturing units are expected to lay down purchase specifications of bought out materials and components as also ensure adequate process control, production control and packing control. Wherever the manufacturing units do not exercise adequate in-process quality controls, consignmentwise inspection is arranged for by the Government agencies.

Apart from the above engineering products, 16 varieties of steel and steel products are also covered under the purview of Export (Quality Control and Inspection) Act. The steel sections are to be covered under the ISI Certification Mark Scheme to qualify for export. In case the export is against a specification other than that of ISI, the materials are accepted on a consignment basis prior to export by the authorised inspection agencies.

In addition to the engineering items which have already been covered under the Export (Quality Control and Inspection) Act, there are proposals to cover six more items, namely, cast iron spun pipes, steel wire rods, domestic refrigerators, water coolers and air compressors. Besides the scheme has been revised in respect of four groups, viz. electric cables and conductors, cast iron soil pipes, cast iron manhole covers and automobile products.

ON FREE-TRADE ZONES IN INDIA

The Government of India are considering the possibility of establishing free-trade zones at Dum Dum, Haldia and Saugar Islands. A high-powered working group is currently examining the proposal. The proposal in regard to free trade zone at Dum Dum seeks to locate in the zone industries like mechanical toys, industrial fasteners, stainless steel cutlery, hand and small tools, miniature decorative lamps, builders' hardware, finished leather and leather manufactures, readymade garments, scientific and laboratory equipment and instruments and selected electronic products.

The Santa Cruz Export Processing Zone (Bombay) has already started functioning effective from May 1973. The work relating to construction of utilities in the zone is under progress. Already quite a few applications have been received by the Zone authorities for setting up manufacturing units. It is expected that the implementation of this project would result in an export earning of about Rs. 500 million per year in about three years from the time the export operation in the zone commences.

The Kandla Free Trade Zone which came into existence in 1965 has achieved notable progress. The total exports from the zone, as by the end of October 1973, amounted to Rs. 47.27 million. In a single year 1972-73 the exports were as much as Rs. 15.12 million as compared to about Rs. 8 million in each of the preceding years.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

IMPORT CONTENT IN SWITCHGEAR INDUSTRY REDUCED

The import content in India's switchgear industry is being reduced progressively. It is reported that in low tension equipment, practically no direct import is required except for a few raw materials. For equipment of higher ratings, however, certain components of specified dimensions and designs continue to be imported. But vigorous efforts are being made to produce and if possible even to standardize some of these equipment so that ancillary industries can be developed and greater self-sufficiency is achieved in the industry.

In the Indian economy, there are 58 active units manufacturing various types of switchgear and control gear items, such as, circuit breakers, motor starters, contractors, motor control panels, isolators, current and potential transformers, switches, switchboards, control panels, fuses and lightning arrestors.

The output of switchgear and controlgear items in the organised sector of the industry was of the order of nearly Rs. 500 million in 1972.

Some of the manufacturers in the line have been allowed to enhance their capacities under full utilisation of plant and machinery. Allocation of raw materials and components were also being made for the additional capacities. It is expected that more capacity would be established in the near future resulting in substantial rise in the output.

As an endeavour towards import content reduction, an industrial licence has been issued by the Government for the manufacture of silicon pellets which is a vital component in the production of silicon diodes. The manufacture of this item is round the corner. Another component, valve blocks (non linear resistances) which is presently being imported for the manufacture of lightning arrestors is also being developed indigenously.

Among new areas of manufacture in the switchgear industry, the production of thyristors has been started during 1972. It is expected that the voltage of transmission lines may be stepped up to 400 kv in the near future. Capacities for switchgear items for this voltage rate are sought to be created. Bharat Heavy Electricals (Hyderabad) has already geared up to take up the production of 400 kv circuit breakers in collaboration with a Swedish firm. There are also plans to invite technical collaboration from abroad for the manufacture of 400 kv isolators. An industrial licence has been granted for the manufacture of current and potential transformers up to 400 kv capacity.

Moulded case circuit breakers, the latest trend in LT circuit breaker technology, are also to be soon produced in India in collaboration with reputed foreign firms. Already industrial licences or letters of intent have been granted to six firms for the manufacture of these circuit breakers which will replace the conventional type of LT air circuit breakers now being produced in India.

In view of the sophistication of technology involved in the manufacture of the switchgear and control gear industry, some of the manufacturers are undertaking in-plant research and development work. A firm has already developed a prototype static power convertor and static inverter controls for motor drivers. The National Research Development Corporation is stated to possess competence to supply technical know-how for the manufacture of silicon diodes up to 200 amps. Presently, silicon diodes are being manufactured in India with imported technology.

The switchgear and controlgear industry has already established itself in the export market. The overall export earning of electrical power machinery and switchgear during 1972-73 amounted to Rs. 56 million as compared to Rs. 47.5 million in the preceding year. Out of this foreign exchange earning of electrical apparatus for electrical circuits and oil circuit breakers, motor starters and control gears, switch fuse units and other control and switchgears amounted to Rs. 25.70 million. Oil circuit breakers were exported mainly to New Zealand and Sri Lanka while switchboard and control panels were supplied among others to Kuwait, Libya, Malaysia, Sri Lanka and Muscat. Other control and switchgears were imported by Malaysia, Libya, Sudan, Singapore and Iraq.

ON DRY AND STORAGE BATTERIES

India's dry and storage battery industries have registered notable progress in recent years. The production of dry battery cells has more than doubled from 300 million numbers in 1965 to 620 million numbers in 1972. To bridge the gap between the growth in production and the rising domestic demand, a large number of new parties have been issued letters of intent and existing units have been allowed to extend the existing capacity. In addition to the licensed capacity of 479 million numbers, fresh licences were issued to cater to the additional demand to take the availability of total capacity to nearly 1230 million numbers as by the beginning of 1973. It is expected that after the implementation of the new schemes, India's demand for dry batteries will be fully met. Even as it is, the product is being exported to various countries notwithstanding stiff competition.

The production of storage batteries has also increased substantially - 745,000 numbers in 1965 to 1.10 million numbers in 1972. Various types of storage batteries are now being successfully manufactured in the country ranging from motor cycle batteries and automotive batteries to heavy duty batteries. Side by side, indigenous demand for these batteries has also been increasing. The industry is capable of meeting the full requirements at present of the Defence, Railways and Posts and Telegraph Departments. An industrial licence for the production of batteries for submarines has also been issued and the commercial production of this variety is of certain possibility in the near future. New units have received letters of intent and expansion of the existing units has been issued to cater to growing demand.

There has been encouraging progress in terms of import substitution in the dry and storage battery industry. The major items of import for the dry battery industry are zinc, electrolytic manganese dioxide, manganese ore, acetylene black, carbon rods and acetate labels. The zinc produced by M/s. Hindustan Zinc is considered suitable as the iron content and copper are sought to be kept to the minimum required. But the production of zinc by the firm is not commensurate with domestic demand. The import of the item is being continued. With the production of electrolytic manganese dioxide within the country, its import would not be essential. Already a sizeable capacity for its manufacture has been established to meet the entire requirement of the industry and there are even plans to increase this capacity. The majority of the capital goods required for the manufacture of dry battery cells are, however, being imported. For a plant of Rs. 16 million production capacity, imported machinery to the extent of Rs. 4.5 million to Rs. 5 million is stated to be required. The major equipment needed to be imported includes extrusion presses, zinc rolling mill, electronic testing equipment and assembly line for the manufacture of batteries.

The major imported items in the storage battery industry are lead, antimony ore and glass wool mat. The production of glass wool mat has already been commenced in India.

Batteries and accumulators have earned Rs. 28.40 million in foreign exchange during 1972-73. Flash lights and other primary batteries secured nearly Rs. 11.5 million. Flash light batteries were supplied among others to Czechoslovakia and Nepal and other primary batteries were imported mainly by Sudan and Nepal. The wet cell primary batteries which earned nearly Rs. 1.5 million were mainly supplied to Poland and German Democratic Republic. Poland was the most important market followed by the Soviet Union for acid type accumulators whose export value in the year was nearly Rs. 3.8 million. Other accumulators netted as much as Rs. 11 million of which the share of U.S.S.R and Poland was the maximum.

IMPORT SUBSTITUTION IN RUBBER GOODS INDUSTRY

India's rubber industry can justifiably feel proud of the strides it has made in the context of import substitution. Till 1960, the industry was importing practically all its principal raw materials except a major share of natural rubber. The industry's total turnover at that time was around Rs. 1000 million and the import was about Rs. 300 million. Today with a turnover of approximately Rs. 3000 million, the import bill has dwindled to about Rs. 60 million. By 1978-79, the industry's output is expected to improve to Rs. 7000 million and the import bill is likely to remain at about the same level as at present.

The chief raw materials required by the rubber goods manufacturing industry are natural rubber, synthetic rubber, reclaimed rubber, carbon black, sulphur, rayon and nylon tyre cord, rubber chemicals, bead wire and tube valves. With a view to developing the industry on sound lines, special measures were taken to establish capacity for these chief raw materials and their production commenced one after the other since the beginning of the Third Five-Year Plan period (1969-70 to 1973-74). Currently, the entire requirement of natural rubber, SBR synthetic rubber, reclaimed rubber, rayon tyre cord, tube valves and bead wire is being met from indigenous production. The requirements of carbon black and rubber chemicals are, however, being met to the extent of 90 to 95 per cent of the total requirement from indigenous sources. The requirement of nylon tyre yarn is also being met partly from indigenous production.

Presently, there are 65 organised units engaged in the manufacture of a wide range of rubber goods in the country. The industry covers products like automobile tyres and tubes, bicycle tyres and tubes, tyre retreading compound, footwear, fan and vee belts, various types of hoses, railway fittings, automobile rubber components, rubber cots and aprons, surgical and industrial rubber gloves, rubber contraceptives, mechanical and moulded rubber goods and extruded rubber goods.

The growth of the industry is to be judged by the consumption of all types of rubber as the basic raw material. The consumption of all types of rubber has more than doubled during the last decade - 64,540 tonnes in 1961-62 to 149,435 tonnes in 1971-72. The average rate of increase of rubber consumption is over 10 per cent per year.

The share of import content in the rubber machinery industry is only of the order of 10 per cent. Even this share is in respect of those items the production of which has already started in the country. This would show that the import content will go down further once domestic production of the imported components is accelerated in course of time.

INDIA'S FIRST THIRD GENERATION DIGITAL COMPUTER

Having achieved many firsts to its credit in sophisticated electronic components, instruments and systems in India, the Electronics Corporation of India Limited (Hyderabad), have recently developed the country's first third generation digital computer - TDC 312.

Being active in the field of computer manufacture since 1970, the firm has so far installed 18 digital computer systems around the first EC computer, the TDC 12 (second generation) and over 30 analog computers (model AC 20).

TDC 312 is a 12-bit-word length computer like the TDC 12 of second generation. It features 1.2 microsecond cycle time, nearly doubling the speed of processing. Indexing, multiplication, division, memory protection, priority interrupt resolution and facility to load system programmes are all implemented through the hardware of the machine.

ECIL has plans to develop special and general purpose computer based data acquisition, logging and control systems with suitable software for research and industrial applications.

The Computer Division of the above organisation has made a series of break–throughs in the field. The third generetion technology has come of age at this Division and their new breed of computers TDC 312, TDC 16 incorporate the latest advances in material, design and technology.

The first and second generation of digital computers produced by the firm - TDC 12-has a processing speed of 250,000 instructions per second and a core memory capacity of up to 32,968 words. The third generation 16-bit computer-TDC 16 - performs over 400,000 additions per second and has a core memory capacity of up to 128 k, 16 bit words. It has applications in sophisticated on-line control such as in nuclear reactor control, business data processing, scientific and engineering research. The AC 20 of ECIL is fully solid state high precision analog computer being marketed since 1970. It has 20 chopper stabilised operational amplifiers, multipliers, diode function generators and a well designed problem board.

NEW MEASURES TO BOOST COPPER PRODUCTION

The Hindustan Copper Limited has formulated a number of schemes for increasing production in mines at the Indian Copper Complex at Ghatsila in Bihar.

A scheme for increasing the rate of production of copper ore at Surda Mine is being taken up. A new Concentrator Plant for treating 2000 tonnes of copper ore per day is being set up at the Mosaboni Mine. The Plant is expected to be ready by April, 1974. The production of copper ore at Pathargora Mines is being increased from the present rate of 200 tonnes per day to 600 tonnes per day over a period of 2 years. The mining methods at the Mosaboni mines are being improved for achieving higher output.

DEBT PROBLEMS OF DEVELOPING COUNTRIES

In a recent study undertaken by the United Nations Conference on Trade and Development, Geneva, certain telling facts on the debt problems of developing countries have come to light. During the 1960s, the total external public indebtedness of 80 developing countries grew at an average annual rate of 14 per cent and at the end of 1969 stood at about $ 59 billion ($ 59,000 million). In the same period, service payments on account of interest and amortization increased at an average annual rate of 9 per cent and stood at $ 5 billion in 1969 and at an estimated $ 5.9 billion in 1970. These rates of increase compare with annual growth rates of 6.6 per cent in exports and about 5 per cent for incomes in the developing countries as a whole and indicate that debt service payments claim an ever increasing share of the export earnings and incomes of these countries. The magnitude of indebtedness is growing notwithstanding increases in disbursements of official grants and loans to developing countries from $ 8.8 billion in 1965 to $ 10.2 billion in 1969. After allowing for repayment of amortization and interest, the net transfer of resources to developing countries declined from $ 5.4 billion to $ 5.2 billion. Even in this brief span of four years, amortization and interest payments rose from 39 per cent of the inflow in 1965 to 49 per cent in 1969. The decline in net transfer of resources would be particularly disturbing when account is taken of the fact that the largest declines occured in the lowest income countries in Africa as well as in India.

Several of the developing countries have been compelled to seek re-negotiation of debt during recent years. There are some other countries which found themselves seriously hampered by the encroachment of debt service on import capacity in the face of inadequate export growth and stagnating flows of concessional assistance. In the light of the targets set for the Second United Nations Development Decade and on cautious assumptions regarding the means of attaining them, it would appear that the pressure of the debt problem may increase during 1970s, and that a larger number of countries may be faced with difficult situation than in the 1960s.

The magnitude of the problem of indebtedness would call for vigorous efforts in developing countries to improve debt management. An important feature of any new approach to the debt problem would be a recognition of the fact that the solution of the problem is inextricably linked with the achievement of the development goals to which the international community is committed. During the 1970s, the determining factor in the context of debt problem would be the volume of official development assistance provided.

"Achievement of the targets set in the international development strategy for the Second United Nations Development Decade for such assistance – 0.7 per cent of the GNP of donor countries - is vital." In this context, the UNCTAD study underlined the need to give careful consideration to the recommendations of the Commission on International Development (Pearson Commission) on the debt problem, namely, debt relief operations should avoid the need for repeated reschedulings and seek to re-establish a realistic basis for development finance; when it is necessary to set limits on new export credits, equal attention should be given to the possible need for concessional external assistance; aid-giving countries should consider debt relief a legitimate form of aid and permit the use of new loans to refinance debt payments in order to reduce the need for full scale debt negotiations; and the terms of official development assistance loans should henceforth provide for interest of not more than 2 per cent, a maturity of between 25 and 40 years and a grace period of 7 to 10 years.

The substance of the U. N. study is that debt relief should not be limited to crisis situations. Re-negotiations of debt on concessional terms where necessary, should be regarded as open for consideration in any case where after reasonable domestic policies have been adopted, the burden of debt service clearly makes severe demands on savings or import capacity. Such factors as declining trend in per capita consumption, or an inadequate rate of growth of foreign exchange availabilities owing to sluggish exports and stagnant capital inflows should be taken as a *prima facie* justification for consideration of debt relief.

The level of present and prospective debt service obligations should be examined, the U. N. study emphasises, within some suitable multilateral fromework in conjunction with the question of the volume and terms of the new capital flows and both should be mutually adjusted in the manner best calculated to achieve the requisite net transfer of resources. Also there would be need for new institutional arrangements to conduct debt negotiations on a very systematic basis and to formulate standards and procedures to be applied in such negotiations so that wide discrepancies do not develop in the treatment of countries in roughly similar situations, as appears to have occured in the past.

While the total outstanding indebtedness of developing countries in 1969 was of the order of $ 59,331 million, the share of Africa was of the order of $ 9,184 million, East Asia $ 7,609 million, Middle East $ 4,883 million, South Asia $ 13,809 million, Southern Europe $ 6,228 million and Western Hemisphere $ 17,618.

Service payment on external public debt as a share of exports of goods and services was 22 per cent (1969) in respect of India (including debt services on some unguaranteed private debt). The highest percentage in that year was in respect of Argentina at 23.9 per cent followed by Mali at 23.2 per cent and Mexico at 22.4 per cent. India's position at 22 per cent was after that of Mexico.

India's indebtedness to foreign countries as on October 31, 1973, stood at Rs. 90081.2 million. Debts to the tune of Rs. 7705.6 million are repayable by the exports of goods. Loans repayable in rupees amounted to Rs. 17,140.8 million. These figures do not take into account the recent agreement on the U.S. rupee holdings under PL-480.

After the United States, the United Kingdom is the biggest creditor with Rs. 8033.5 million. The country owes the Federal Republic of Germany a sum of Rs. 6186.10 million. The debt to the Soviet Union, which could be repaid by the export of goods, stood at Rs. 3434.5 million.

As on August 15, 1947, India had no foreign debts. The position gradually worsened over each plan period–the debt position being Rs. 196.6 million in 1951; Rs. 1,177.4 million in 1956; Rs. 8,643.1 million in 1961 and Rs. 68,496.2 million in 1969.

Till the end of October this year, India had paid out interests totalling Rs. 16,888.9 million. Of this, Rs. 1,000 million has been paid through export of goods and Rs. 4,050 million paid in cash. If PL-480 funds had not been written off, India would have had to pay over Rs. 10,782.8 million as interest between 1974 and 1979.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

CYCLONE WARNING RADAR

A new radar capable of giving a 24 hours warning of imminent arrival of a cyclone to the towns and villages in the neighbourhood of the place of installation, has been installed on the top of the 13-Storey New Secretariat building of the West Bengal Government recently. The radar's range will cover towns and villages on the coast of West Bengal for cyclone warning.

The radar, which has a diameter of four metres scans the sky like a gigantic eagle while rotating on its axis. Its delicate antennae are poised to detect the slightest disturbance in the atmosphere in a range of 400 kilometres south of the Bay of Bengal. The antennae are 66 metres above the ground. The antennae are protected against strong winds by a fibre glass radio dome.

The Calcutta radar is one of four on the east coast. The other three have been installed at Paradip, Madras and Vishakhapatanam. Two more storm warning radars are being set up by the Indian Meteorological Department at Masulipattam in Andhra Pradesh and at Karailkal near Madras. Bombay and Goa will also have radars next year.

The radar is operated whenever there are signs of a storm brewing in the Bay of Bengal. It sends out pulses of electro-magnetic radiation which help trace the structure of the cyclone on a special map of the area. This information is fed through teleprinter lines to forecasting offices.

Apart from tracking cyclones and forecasting their speed, duration and potential for destruction, the Calcutta radar will also give advance information about the likelihood of floods.

SHELL-TYPE HOUSES DEVELOPED

A novel form of shell-type houses using hollow clay blocks has been developed by the Structural Engineering Research Centre, Adyar, Madras. This form of construction makes use of hollow clay blocks, 15 cms. thick.

It is an example of shape engineering and of strength through form as opposed to strength through mass. By building in the form of a catenary shell, the structure is put in a state of compression obviating completely the need for steel reinforcement.

The structure built with clay blocks, has a long life lasting for 50 years and even more.

Hollow clay blocks, being light in weight, reduce the need for expensive and deep foundation. The entire building of 350 sq. ft., including foundation, superstructure, flooring and finishes, can be completed in about seven days. The overall cost of this form of construction is expected to be as low as Rs. 12 to 15 per square foot.

The consumption of cement for these hollow clay block structures is just half of that for traditional brick and slab constructions.

OIL FROM COCONUT

A new process for the direct conversion of raw coconut into oil, protein and edible flour has recently been developed by an Indian engineering firm.

The process known as "Solval", when used commercially, is expected to replace the age-old method of sun-drying the coconut to copra before extracting the oil.

The first plant to use the new process, is proposed to be established in the Philippines, the world's largest producer of coconut. The second plant is to be set up in Kerala which accounts for more than 50 per cent of India's coconut production.

The firm, which developed the process, is now engaged in the design and construction of plant and equipment for the chemical industry.

ELECTRONICS INDUSTRY

A PROFILE

Electronics industry in India has come of age. The post-independence period, particularly early 'sixties, witnessed the industry growing rapidly at an average annual rate of 20 per cent in terms of output value. Included in the priority sector of the economy, this highly labour intensive industry has enabled the country to join the select group of those few nations which are in the forefront in this line of manufacture. In fact, manufacture of sophisticated electronic items by the industry has heralded a new era in the field of science and technology in the country as these are of vital importance in various fields, such as, atomic energy, communication, defence, education, entertainment and space technology.

From the value of Rs. 440 million in 1965-66, the industry's output exceeded the Rs. 2,000 million mark in 1972-73. Every year, the industry adds new items to its production stream. For instance during 1971-72 as many as 25 new ranges and items have been added to the existing lines of manufacture. The range of items broadly includes, radio receivers and consumer products, defence equipment (low-power radio communication equipment, micro-wave, radar and radio navigation equipment and line communication systems), high power radio transmitters and major industrial equipment, data computer (nuclear and medical), test instruments and electronic components.

The production of electronic and telecommunication items during 1972 was : radio receivers Rs. 300 million (1.93 million numbers); television sets Rs. 27.54 million (14,761 numbers); teleprinters Rs. 29 million (5,600 numbers); computers Rs. 15.54 million (30 numbers); electronic desk calculators Rs. 3.90 million (406 numbers); record players Rs. 16.35 million (92,320 numbers); transistors and diodes Rs. 71 million (39 million numbers); receiving valves Rs. 22.30 million (over 5 million numbers); T.V. picture tubes Rs. 10.75 million (26,935 numbers); transmitting tubes Rs. 8.90 million (11,755 numbers); cathode ray tubes Rs. 273,000 (1,085 numbers); microwave tubes Rs. 1.58 million (109 numbers); crystals Rs. 11.45 million (0.22 million numbers); carbon film resistors Rs. 4.70 million (67 million numbers); potentio metres Rs. 6.24 million (4.47 million numbers); loudspeakers Rs. 19.10 million (2.29 million numbers); gang condensors Rs. 10 million (2.19 million numbers); switches Rs. 9.30 million (2.81 million numbers); paper capacitors Rs. 2 million (4.68 million numbers); ceramic capacitors Rs. 5.94 million (38.5 million numbers); mica capacitors Rs. 1.47 million (1.36 million numbers); plastic film capacitors Rs. 10 million (23.90 million numbers); electrolytic capacitors Rs. 8.20 million (10.19 million numbers); ferrites (soft and hard) Rs. 7.25 million (196 tonnes) and permanent magnets Rs. 22.27 million (340 tonnes).

The infrastructure of the electronics industry comprises thousands of small scale units in the private sector comprising over one hundred organised units scattered all over the country and large public sector units. In public sector, there are 8 major units engaged in the manufacture of specialised items. The units in the private sector mainly produce consumer electronic products like radio, TV and tape recorders but are gradually diversifying to undertake manufacture of components and a wide variety of professional electronic products. They are also instrumental in developing professional grade components, instruments and subsystems for many public ventures as also in the development of ground equipment for satellite communications. Many of these units have penetrated into export markets in recent years which include even the sophisticated countries like U.K. and U.S.A. In the public sector, the major units are, namely, M/s. Bharat Electronics Limited (BEL), Bangalore; M/s. Indian Telephone Industries (ITI), Bangalore; M/s. Electronics Corporation of India Ltd. (ECIL), Hyderabad; M/s. Hindustan Teleprinters Limited, Madras; M/s. Instrumentation Ltd., Kota, Rajasthan; M/s. Hindustan Aeronautics Ltd. (HAL), Hyderabad; P. & T. Telecom Factories and Railway Signalling and Telecom Workshops. During 1972-73, the production of M/s. Bharat Electronics Limited was of the order of Rs. 400 million as compared to Rs. 330 million in 1971-72. M/s. Indian Telephone Industries, Bangalore produced telephones and other items in the line to the tune of Rs. 370 million (1972-73) as compared to Rs. 320 million while M/s. Electronics Corporation of India Limited manufactured electronic items worth Rs. 70 million as compared to Rs. 35 million. Among other public sector units, M/s. Hindustan Aeronautics Limited produced worth Rs. 59 million as compared to Rs. 54 million; M/s. Instrumentation Limited (Kota) Rs. 60 million against Rs. 50 million; P. & T. Telecom Factories Rs. 83 million against Rs. 70 million and Railway Signalling and Telecom Workshops Rs. 26 million against Rs. 24 million.

Although the units in both, public and private sectors commenced production of electronic items with imported technical know-how in the initial stages, they have now geared themselves to develop know-how of their own, incorporating the use of a large number of indigenous parts and components in their production line. In TV manufacture, for instance, the import content has been reduced to a negligible per cent. For transistor sets, the manufacture has been almost indigenised. There are a number of other items in which either the import

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content has been eliminated completely or brought down to a large extent. The Government of India encourages the establishment of large number of small and medium sized units in the field of entertainment electronics. In recent years, about 60 units have been licensed to manufacture TV sets, 50 units for tape-recorders and for other sophisticated items, such as, desk calculators.

The Government of India have set up Electronic Commission which reviews the development of electronics industry with regard to research, development and industrial operations with full authority to formulate policies in the field with a view to enable the industry to achieve self-sufficiency. The Department of Electronics, the executive wing of the Electronics Commission, is consistently endeavouring to achieve this goal.

Many research institutions engaged in the research and development of electronic items, contributed sizeably to the development of the industry. The recent trend towards self-reliance can be attributed towards the greater contribution of scientists and research engineers in the field. For the first time in the country, the know-how for TV production was developed for commercial exploitation by Central Electronics Engineering Research Institute (CEERI), Pilani, Rajasthan. Bhabha Atomic Research Centre (BARC) and Tata Institute of Fundamental Research were instrumental in developing know-how for digital computers marketed by Electronics Corporation of India Limited (ECIL), Hyderabad. Apart from these, National Physical Laboratory (NPL), New Delhi, Central Scientific Instruments Organisation, Chandigarh and Electronics and Radar Development Establishment, Bangalore, contributed actively to the development of the industry with their research and development activities.

Alongwith its progress in production, the industry is equally active in export field. The annual export performance of the industry is around Rs. 60 million. The export range includes Television Broadcast receivers and parts, radio broadcast receivers, transistor radio receivers sets, telegraph apparatus and instruments, telephone apparatus and instruments and parts, microphones, loudspeakers, amplifiers, microphone parts, television cameras, wireless reception with transmitting apparatus and transmission reception apparatus parts and other electronic items.

U.K., Sudan, Netherlands, Arab Republic of Egypt, Bangladesh, Ireland, Dubai, Bulgaria, Ethiopia, Nigeria and Thailand were the leading destinations. ☐

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EXPORT DEBUT IN ELECTRONIC MUSICAL MOVEMENTS

For the first time in India M/s. Shreeshyla Electronics Private Limited, Bangalore (Karnataka), a small scale unit in the cooperative sector secured export orders for the supply of 1.5 million numbers of musical movements from developed countries.

So far, musical movements were being manufactured by Japan and Switzerland. It is stated that Switzerland alone was exporting these movement to the tune of about 30 million numbers per annum. Against this background, the emergence of this small scale unit in India has indeed added a sophisticated electronic item to the country's export stream. The firm purposes to manufacture these movements entirely for export purpose. The assembly and export will be effected under customs bond. Taking into consideration the wide export market for the product, the firm is expected to make a big headway in the export field.

One more firm, M/s. Shreeshyla Timex Private Limited, Bangalore, a small scale unit in the cooperative sector has entered into the manufacture of sophisticated electronic desk calculators, namely 'Shreeshyla–450'. These calculators are being currently manufactured with technical assistance from another Indian firm M/s. Hedge and Golay Private Limited, Bangalore, an Indo-Swiss joint venture project. The new desk calculator is stated to be the lightest and most compact so far produced in India, incorporating the modular construction technique.

Both the firms are members of the Shreeshyla Cooperative Society at Bangalore. The society has 22 small scale units as its members. Of these, 18 are earmarked for the manufacture of watch movements, including the latest model of components of electronic wrist watch. M/s. Hedge and Golay, Bangalore, is currently providing complete technical assistance and training facilities to about 40 engineers belonging to the member units of the society.

India offers a wide variety of electronic items to world markets. The range broadly covers radio receivers, television sets, teleprinters, computers, desk calculators, record players, transistors and diodes, receiving valves, TV picture tubes, transmitting tubes, cathode ray tubes, microwave tubes, crystals, carbon film resistors, potentio metres, loudspeakers, gang condensors, switches, paper capacitors, ceramic capacitors, mica capacitors, plastic film capacitors, electrolytic capacitors, ferrites, permanent magnets and a large numbers of other sophisticated items in the line.

During 1972-73, India's total production of electronic items exceeded the Rs. 2000 million mark. In fact, the output rose to this level from only Rs. 440 million in 1965-66.

MORE EXPORT ORDERS FOR POWER TRANSFORMERS

M/s. Heavy Electrical factory, Bhopal has undertaken to supply ten Power Transformers for service in sub-stations under the National Electricity Board in Malaysia. This order, valued at over Rs. 7 million has been procured by the factory in the face of stiff international competition.

The factory is already executing an order from Malaysia which includes supply of the largest transformers ever ordered in this country. With the new order, the factory will supply approximately Rs. 15 million worth Power Transformers from Bhopal to Malaysia during the remaining part of 1973 and throughout 1974 and 1975.

Electric motors, Controls, Capacitors and H. T. Switchboards already exported by the Bhopal factory are now in service in important water pumping stations in Malaysia.

Transformers, Switchgears, Capacitors, Electric Motors and Controls and other items manufactured by M/s. Heavy Electricals, Bhopal are already in service in Egypt, Iraq, Kuwait, Uganda, Malawi and Sri Lanka. Further orders include supply of similar equipment to Kenya, Cambodia and Bangladesh.

India's total export trade in transformers fetched nearly Rs. 18 million in 1972-73.

During 1972-73, Transformers in a variety of specifications were supplied to a large number of countries abroad. Malaysia, New Zealand, Guyana, Kenya, Malavi, Thailand, Sri Lanka, Libya, Tanzania Republic, U.S.A. and Iraq ware the principal markets.

Included in the priority sector, India's transformer industry has an annual installed capacity of 14.46 million KVA. During 1972, the industry's production was of the order of 11.31 million KVA as against 10.15 million KVA in 1971.

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STEEL PIPES EXPORTS UP

M/s. Zenith Steel Pipes Limited, Bombay, one of the firms engaged in the manufacture of steel pipes nearly doubled their exports from 6164 tonnes in the year ending April 1972 to nearly 12,000 tonnes in the following year. The firm has acquired technical competence even to undertake assignments abroad in this line of manufacture. Its product range is sought in a number of countries abroad which include even the developed ones.

The Bombay firm is currently engaged in diversifying their line of manufacture. They are to soon set up an electric ore-furnace plant in Maharashtra for the manufacture of steel ingots and billets at an estimated cost of Rs. 9 million. The plant is expected to go on production stream in the third quarter of 1974.

India's steel tubes, pipes and fittings industry secured foreign exchange worth Rs. 111.78 million during 1972-73 as compared to Rs. 108 million in the preceding year. U.S.S.R., Saudi Arabia, Australia, Jordan, U.S.A., Czechoslovakia, Bangladesh, Sudan, Kuwait, Singapore, Hong Kong and Malaysia were the prominent importing countries.

In the organised sector, an installed capacity of 418,000 tonnes of spun cast iron pipes was spread over among 9 units (1972) and their total production of 200,000 tonnes was estimated at Rs. 200 million. In the same year, in the sand cast iron pipes sector, 4 units with an installed capacity of 57,000 tonnes, actually produced 10,000 tonnes at an estimated cost of Rs. 10 million.

ELECTRIC BULBS ON EXPORT STREAM

Overseas demand for India-manufactured electric bulbs is picking up rapidly in recent years. The export range included automobile bulbs, photographic bulbs, electrically ignited bulbs, flash bulbs, gas - filled electric bulbs, horticultural bulbs, infra-red bulbs, miniature bulbs, electric bulbs, torch bulbs, (flash light) and ultra–violet bulbs. Nepal, Afghanistan, U.K , Sudan, Kenya, Iraq, Bahrein Islands, Turkey, Spain, Lebanon and Dubai are the prominent importing countries.

M/s. Bengal Lamps, Calcutta, one of the units engaged in the manufacture and exports of a wide range of electric goods secured export orders for electric bulbs to the tune of Rs. 1.5 million. Additionally, they have firm enquiry for tube lamps at a value of Rs. 5 million. They are exporting electric bulbs to a large number of countries abroad among which Nigeria, Ethiopia, Singapore, Thailand and Bangladesh are prominent.

A net importer of ever simple electric manufactures a few decades back, India emerged as a competent supplier of a wide range of electric items to world markets. The export range broadly covers electric power machinery and switchgear; equipment for distributing electricity; telecommunication apparatus; domestic electric equipment; electric apparatus for medical purposes and radiological apparatus and other electrical machinery and apparatus.

During 1972-73, the electric goods industry earned foreign exchange to the tune of Rs. 234.30 million which was higher as compared to the export value in the preceding year at Rs. 186.75 million.

WOOLLEN HOSIERY TO SOVIET UNION

The Handicrafts and Handlooms Export Corporation of India Limited have recently concluded export contracts for the supply of 1.85 million pieces of woollen knitwear to the Soviet Union at a value of the contract totalling Rs. 135.30 million. The supplies are to be effected during the year 1974.

In the year 1972-73, wool and woollen exports from India amounted to as much as Rs. 480 million, registering an impressive rise of about 34 per cent over the export value in the preceding year at Rs. 358 million.

During 1972-73, carpets, druggets and numdahs constituted the major area of export growth which accounted for about 44.3 per cent of the total export value. Their export earning was valued at Rs. 212.50 million as compared to Rs. 131.8 million in 1971-72. Federal Republic of Germany, U.S.A., U.K., Canada, Netherlands and Sweden were the prominent destinations.

Woollen hosiery was the next best category which secured foreign exchange worth Rs. 168.80 million as compared to Rs. 144.80 million. U.S.S.R. continued to be the topmost buyer which bought at a cost of Rs. 135.30 million as compared to Rs. 117.80 million. Poland, Czechoslovakia, Libya, Hungary, Kuwait and Malaysia were significant among other buyers.

Raw wool exports too rose appreciably to Rs. 60 million from Rs. 35 million, registering about 72 per cent increase. Belgium, U.K. and U.S.S.R. were the principal importing countries.

Apart from these leading categories, exports of blankets, shawls, shoddy wool, wool tops and worsted yarn knitting wool looked up marginally during 1972-73 as compared to their values in the preceding year. However, woollen and mixed fabrics and woollen readymade garments were the only categories which registered decline during the year under review as compared to their export earning in the preceding year.

TEA TO WORLD MARKETS

M/s. Brooke Bond India Limited, Brooke House, 9, Shakespeare Sarani, Calcutta-16, one of the major blenders and packers of tea and coffee have come to contribute sizeably to the country's foreign exchange earning. During 1972-73, the firm's total exports reached an all time high of over Rs. 200 million. They are hopeful of exporting instant coffee to U.S.S.R. in the near future. The company's products are already popular in quite a large number of countries of the world. Their packet tea exports, particularly tea bags, are picking up.

Apart from beverage production and exports, the firm has plans to diversify and undertake new line of manufacture mainly for export purpose. They have active proposals to set up meat and oteoresin projects. They are also to enter into the field of marine products and packaging machinery. Their venture in the latter field is estimated to save sizeable sum of foreign exchange as these are currently being imported.

During 1972-73, India's export trade in tea was of the order of Rs. 1472.95 million as compared to Rs. 1563.15 million in 1971-72. Black tea, black tea in packets, black tea (dust) and green tea were the prominent varieties supplied overseas at a cost of Rs. 1353.55 million, Rs. 89.50 million, Rs. 29.70 million and Rs. 20.15 million respectively.

U. K. U.S.S.R., Netherlands, Arab Republic of Egypt, Ireland, Federal Republic of Germany, U.S.A. and Afghanistan were the principal buyers of black tea while Afghanistan, Sudan, Dubai Nepal, Qatar, Bahrein Islands, Jordan and Iraq were the main buyers of black tea in packets. Black tea (dust) was mainly bought by Afghanistan, Arab Republic of Egypt and Dubai while green tea was imported by a large number of countries among which Afghanistan, Spain and U.S.A. were prominent.

India's total production of tea during 1972 was of the order of nearly 452 million kgs. as compared to 433.30 million kgs. in the preceding year. The target of tea production in 1972 was placed at 446 million kgs.

Several development schemes have been formulated for the development of tea plantation industry, particularly for replanting, replacement, extension of tea areas, provision of facilities for acquiring machinery and equipment. The Tea Board, Calcutta with its five overseas offices in London, Brussels, New York, Cairo and Sydney is engaged in uninational and generic promotion activities to project the image of Indian tea as also to increase the over all consumption of tea. The Tea Trading Corporation was set up in December, 1971 with a view to market Indian tea in consumer packes in certain selected countries.

EXPORT PERFORMANCE AND POTENTIAL

AGREEMENT WITH EUROPEAN ECONOMIC COMMUNITY

A Commercial Cooperation Agreement was signed between the Government of India and the Council of the European Communities on the December 17, 1973 at Brussels. The Agreement was signed by prof. D. P. Chattopadhyaya, Commerce Minister, on behalf of India and the President of the Council of the European Communities on behalf of the Communities.

It may be recalled that for the last one decade, India has been making efforts with the Community for the conclusion of a Commercial Cooperation Agreement so as to establish a viable and harmonised trade and economic relationship with the Community. The rectification of the chronic adverse balance of trade that India has been having with the Community and expansion and diversification of her exports to this region is not possible unless positive and systematic efforts are made within the framework of a Commercial Cooperation Agreement. Following U. K's. entry into the Community and the new difficulties which confront India, the need for such an agreement assumed greater importance.

The signing of the Agreement is a landmark in the India-EEC trade relations and would enable India to forge closer links with the Community.

The main objective of the Agreement is to develop mutual commercial exchanges on the basis of comparative advantage and mutual benefit so as to contribute to mutual economic and social progress. The Agreement expresses the Community's intention to bind the customs tariff at zero level in regard to certain important items of India's export interest viz. tea (in bulk), pepper (for industrial use), cardamom and East India Kips.

One of the main elements of the Agreement relates to the establishment of a Joint Commission for commercial cooperation. The tasks of the Joint Commission have been made specific to include examination of ways and means for the progressive adaptation of the trade pattern and marketing structures with a view to promote commercial and economic relations and assist development and diversification of trade. The Joint Commission fulfils the long felt need for a continuous forum to examine difficulties hindering the development of mutual trade exchanges.

It is the first time that the Community has signed an agreement of the present nature with any non-associate developing country. The signing of the agreement is indicative of the friendly response of the enlarged Community towards India.

The Community has also now agreed to continue the present duty-free regime in U. K. and Denmark during 1974 for Indian jute and coir products. Earlier, the Community was only prepared to reduce its tariff on these two products by 60 per cent (50 per cent on carpet backing). It is expected that following further negotiations during 1974, the Community would be persuaded to bring down its tariff eventually to zero level on both these products and the duty-free entry for these items will continue in U. K. and Denmark beyond 1974.

TRENDS IN INDIA'S EXPORT TRADE

The value of India's export trade (including re-exports) during January-September, 1973 amounted to Rs. 16,564 million. This export value was up by Rs. 2720 million (19.6 per cent) as compared to the same period of 1972 and by Rs. 5140 million (45 per cent) higher over the same period of 1971. Actual figures for the same period in 1972 and 1971 were Rs. 13,844 million and Rs. 11,423 million respectively.

In 1972, the value of Indian exports totalled Rs. 18,618 million as compared to Rs. 15,256 million in 1971 and Rs. 15,200 million in 1970.

The export figures for the period April 1973 onwards have been based on the finally passed shipping bills and thus are not strictly comparable with those for January-September 1972 as it was based on the original copy of the shipping bill but was adjusted for short and shut-out shipments. Also a lumpsum adjustment of Rs. 800 million was made in the figure for March 1973 for the incomplete recording of exports to Bangladesh during the earlier months of 1972-73.

In the first half of 1973 (January-June), the export value of oilcakes stood at Rs. 675 million as compared to only Rs. 224 million in the same period of 1972. Exports of unmanufactured tobacco also improved to Rs. 433 million from Rs. 326 million, millmade cotton piecegoods Rs. 460 million from Rs. 336 million, iron ore Rs. 620 million from Rs. 539 million, East India tanned hides and skins Rs. 567 million from Rs. 402 million and iron and steel Rs. 168 million from Rs. 94 million.

In this period (January-June, 1973), the export value of raw cotton, cashew kernels and cotton yarn showed marginal decline as compared to the same period of 1972 and a somewhat sizeable decline in respect of tea, jute manufactures and raw jute.

Several export promotion measures are being taken by the Indian Government from time to time. These include supply of imported raw materials through replenishment licensing, removal of capacity constraints and stepping up of export production and abolition or reduction of export duties, wherever justified. The role of public sector agencies is also being expanded in the country's export and import trade. The import policy for the current financial year (1973-74) has been made more export oriented allowing increased facilities in respect of import of raw materials, machinery and equipment. Incentive is also being provided for the supply of certain indigenous raw materials at international prices. It is hoped that these measures will help continue growth in the country's export trade. In addition, the constant process of exploring foreign markets, generating export surpluses and stepping up export production is also being strengthened.

EXPORT TRADE IN WIGS AND EYELASHES

Wayback in 1967-68, India secured as much as Rs. 2.60 million through her export trade of wigs and eyelashes. In the same year, the export earning of processed hair was of the order of Rs. 3.63 million. Since then, exports of wigs and eyelashes dwindled. External sales of processed hair which netted as much as Rs. 5 million in 1968-69 also declined thereafter. In 1972-73, the export value of wigs and eyelashes was Rs. 146,000 and that of processed hair Rs. 520,000. These two categories of exports earned only Rs. 92,000 and Rs. 161,000 respectively in 1971-72.

The reasons for the decline in overseas demand for hair and its products are not far to seek. The competition from synthetic materials is obvious. But the diversification plans being made by M/s. Wigs India, Madras of the State Trading Corporation are expected to improve the export position in the field.

M/s. Wigs India set up in 1965, which helped boost exports of wigs and processed hair, has in the course of years, met with severe competition from synthetic products and consequent steep fall in the demand for them. The factory now manufactures eyelashes and cowboy uppers and has a proposal for setting up a leather development unit in the factory.

Earlier, the wigs made in India proved quite popular in the American market. Diversification plans in export trade yielded good results in some of the European countries too.

RAW SILK EXPORTS BANNED

The Government of India have banned export trade in silk yarn known as raw silk.

The main reason for banning the exports was the considerable rise in the prices of raw silk and the difficulties faced by domestic weavers in regard to its adequate availability at reasonable prices.

ELECTRONICS TRADE FAIR AND EXPORT ORDERS

Orders worth about Rs. 6.50 million were placed by the representatives of foreign business firms from U.K. Italy, Japan and Cyprus at the Electronics Trade Fair which was held recently in Bombay.

Of the orders received, those accepted by the Indian firms amounted to Rs. 3.20 million for which letters of credit are being opened. The balance of orders at Rs. 3.30 million are in the final stage of negotiations. Arising out of the trade enquiries received during the Fair, additional orders worth Rs. 2.7 million are likely to be placed with Indian firms in due course.

EXPORT ORDERS AT SCANDINAVIAN TEXTILE FAIR

The participation of the Handloom Export Promotion Council, 123 Mount Road, Madras at Texpo '73 Scandinavian Fair for home furnishing textiles held in Copenhagen during September this year, has resulted in confirmed export orders for handloom items worth Rs. 1.65 million. Besides, quite a few orders are reported to have been booked outside the fair.

It was the first time that the Council participated in an exclusive furnishing exhibition. A wide range of furnishing material like curtain cloth, bedspreads, upholstery materials, woollen and cotton carpets, table cloths and silk, cotton and mixed furnishing materials were displayed.

Indian exports of handloom textiles to the Nordic countries have shown signs of dynamism in recent years. The export value to Sweden improved from Rs. 94,500 in 1970-71 to Rs. 263,300 in 1971-72 and Rs. 323,600 even in the first three quarters of 1972-73. To Denmark, the exports rose from Rs. 67,000 to Rs. 85,300 and Rs. 100,800 in the respective periods while to Finland the export figures were Rs. 14,500, Rs. 15,900 and Rs. 29,000. To Norway also the handloom exports rose from only Rs. 7250 in 1971-72 to Rs. 23,500 in the following year.

INDO-BULGARIAN TRADE CONTACTS

Pursuant to the visit of a Bulgarian Trade Delegation to India recently, a trade protocol was signed between the two countries envisaging a trade turnover of Rs. 470 million during 1974. In 1972, Indian exports to Bulgaria amounted to Rs. 193 million while her imports to Rs. 183 million. Upto August in 1973, the exports were Rs. 182 million and imports Rs. 110 million.

Besides the exports of traditional commodities like jute manufactures, deoiled cakes, iron ore, tea and coffee, the trade protocol included a number of engineering and non-traditional items including consumer goods, such as, leather footwear and leather goods, aluminium cables, steel ropes, chemicals, drugs and pharmaceuticals and sports goods.

Under the protocol, the principal items of imports into India from Bulgaria during 1974 would be fertilisers, rolled steel and steel products, organic and inorganic chemicals, pharmaceuticals and certain engineering goods.

Trade relations between India and Bulgaria are regulated by a long term trade and payments agreement which provides for the settlement of all the commercial and non-commercial transactions in Indian rupees. The existing agreement which is valid up to the end of December 1973, has been extended for a further period of one year or till a new agreement is signed.

Total trade between the two countries rose from Rs. 102 million in 1965 to over Rs. 199 million in 1970, Rs. 291 million in 1971 and Rs. 376 million in 1972. During the period January-August, 1973, the two-way trade was of the order of Rs. 293 million. India's exports to Bulgaria rose from Rs. 43 million in 1965 to Rs. 72 million in 1970, Rs. 134 million in 1971 and Rs. 193 million in 1972. During January-August 1973, the export value was Rs. 182 million.

Among the non-traditional items, the major exports from India to Bulgaria are steel wire ropes, cables with aluminium conductors, textile machinery machine tools, automatic couplers for railway wagons, chemicals and drugs and pharmaceuticals, paints, pigments, varnishes and enamel, dyes and dye-intermediates, leather footwear including slippers and uppers and sports goods. The major traditional products exported by India to that country are jute manufactures, de-oiled groundnut and other cakes, tanned hides and skins, iron ore, manganese ore, crushed bones, tea, black pepper and Bangladeshi cotton.

The principal items of imports into India from Bulgaria are urea, rolled steel products, carpo-lactum, chemicals and pharmaceuticals, non-ferrous metals like zinc, lead and copper, synthetic fibres and rayon, special electronic apparatus and components, machinery and equipment.

TRADE WITH LATIN AMERICAN COUNTRIES

India's export trade to the Latin American region totalled Rs. 125.82 million in 1971-72 and over Rs. 42.24 million in the subsequent year. Indian imports from the region amounted to Rs. 57.4 million and Rs. 231.80 million in the respective years.

During 1972-73, the major recipients of Indian exports in the Latin American region were Argentina (Rs. 7.7 million), Mexico (Rs. 6.8 million), Peru (Rs. 4.57 million), Brazil (Rs. 4.44 million), Dominican Republic (Rs. 4.33 million), Chile (Rs. 3.64 million), Panama Republic (Rs. 3.44 million) and Bolivia (Rs. 2.40 million). The decline in the value of Indian exports to the Latin American countries was mainly due to the lower offtake by Argentina, Chile, Peru and Mexico. Argentina imported worth as much as Rs. 59.97 million in 1971-72 while Chilean imports in that year totalled Rs. 23.38 million, Peruvian Rs. 9 million and Mexican Rs. 8.73 million. Uruguay which imported worth Rs. 6.46 million in 1971-72 purchased to the tune of merely Rs. 1.19 million in the year that followed.

The major sources of India's import trade from the Latin American Region were Argentina, Peru, Brazil, Mexico in that order during 1972-73. The imports from Argentina amounted to Rs. 179.74 million during 1972-73 as compared to only Rs. 1.33 million in the previous year. This substantial rise was the principal factor which resulted in a near quadruple increase in the total value of Indian imports from Latin America during 1972-73 as compared to the previous year – Rs. 232 million against Rs. 57.4 million. Imports from Peru also revealed an increasing trend; they stood at Rs. 31.2 million in 1972-73 as compared to Rs. 17.4 million in 1971-72. Imports from Brazil and Mexico respectively amounted to Rs. 12 million and Rs. 7.96 million during 1972-73.

The balance of trade between India and Latin America was in favour of the former till 1965-66. This trend changed drastically thereafter as India had to import large quantities of cereals, uncut diamonds and sulphur. Simultaneously some of the traditional exports from India to Latin America suffered as in respect of jute manufactures. At a time jute goods constituted the bulk of Indian supplies to the region. Gradually, the Latin American purchases of the product declined. Argentina, for instance, stopped its imports of jute goods from India as she built silos for wheat storage and her need for jute bags was reduced substantially. Similarly, Peru and Brazil resorted to indigenous fibres.

Indian exports to the Latin American region have been confined only to certain traditional agro-based items like jute goods, shellac and tea. Also Indian imports from the region have been confined to non-ferrous metals, cotton and wheat. With the gradual transformation both in the Indian and the Latin American economies over the years, the two-way trade witnessed a declining trend and this prompted the respective Governments to diversify the areas of mutual trade relationship.

From India, three trade delegations were sponsored to visit some of the Latin American countries – by the Federation of Indian Chambers of Commerce and Industry, Projects Equipment Corporation and Engineering Export Promotion Council – and these visits opened up fresh opportunities of trade expansion. The visiting delegations indentified several fields under which the Indian economy can export to Latin

America on a competitive basis. Some of the non-traditional products that the delegations indentified include railway epuipment, bulk handling and mining equipment, cotton textile machinery, sugar mill machinery, power distribution equipment like transmission line towers, metres, sewerage and water supply material, central air-conditioning, refrigeration and chilling equipment including compressors and so on.

Since the Latin American region is also striving towards industrialisation as is India, it is felt that the technical expertise built by them can be exchanged for mutual benefit in addition to physical exchange of their wares. Having traversed some distance in the context of industrial development and diversification, the Indian economy is in a position to offer her technology and consultancy services in a varity of manufacturing activities, mainly of infra-structural nature.

India has signed trade agreements with Chile, Peru, Brazil and Colombia in the Latin American region. These agreements provide for the Most Favour Nation treatment. It is likely that further agreements will be signed with other countries in the region.

Notwithstanding the fundamental deterrents, such as, irregular direct shipping services, prohibitive tariff restriction and the region's nearness to the most developed markets of the world, products of India have made dent in the Latin American region. The importing community in these countries are gradually getting aware of the new product possibilities which the Indian economy can offer to them. This consciousness augurs well for increased trading opportunities on a mutually beneficial basis.

INDO-GERMAN COLLABORATIONS EARN FOREIGN EXCHANGE

Indian firms with collaboration from Federal Republic of Germany earned foreign exchange worth Rs. 111.60 million in 1972 through their export of a wide range of products. The export value amounted to Rs. 96.9 million in 1970 and Rs. 92.9 million in 1971. The comparative figures of the total transfer in the form of dividends, licence fees and interest payments of all Indo-German collaborations operating in India stood at Rs. 31.4 million and Rs. 44.4 million in 1969-70 and 1970-71 respectively, it is learnt from the Indo-German Chamber of Commerce, New Delhi.

India's total export to Federal Republic of Germany registered a substantial increase during the year 1972-73 which amounted to Rs. 620 million as compared to Rs. 370 million in 1971-72.

MANGANESE ORE AND EXPORT PERFORMANCE

India's export trade in manganese ore amounted to 832,000 tonnes at a value of Rs. 86.70 million during 1972-73 as compared to 1.19 million tonnes at Rs. 117 million in 1971-72. Until 1960, India was the leading exporter of the ore, followed by Soviet Union, Brazil, South Africa and Ghana. Today, it is the fourth largest exporter in the world. A number of developed countries which have been bulk importers of the ore have promoted captive sources of supply in Gabon and Brazil as also stepped up as in the case of South Africa and Australia their own production and emerged as leading exporters. Consequently, the share of developing countries which rose from 39 per cent in 1950 to 43 per cent in 1957, declined to 38 per cent in 1969, while the share of developed countries in the global trade increased from 16 per cent in 1950 to 22 per cent in 1969. There have also been structural shifts in the pattern of Indian exports and the traditional markets of U.S.A. and U.K. have been replaced by Japan which is today the largest single importer of the ore from India, accounting for over 75 per cent of the total exports every year. Notwithstanding all these facts, India is able to matintain its share in the total world exports at 13 per cent.

India itself has an ambitious programme for the manufacture of steel in the production of which manganse ore finds main utility. With the steady grawth of iron and steel industry and expansion of ferro-manganese industry in the country, the requirements of manganese ore for indigenous consumption are expected to go up sizeably. With this in view, the Government of India applied restrictions, effective from April 1973, on export of manganese ore with reference to manganese content of the ore, the higher grades being more restricted than those in the lower grades.

India's total production of manganese ore is estimated at about 1.6 to 1.7 million tonnes every year.

INDUSTRIAL DEVELOPMENT AND DIVERSIFICATION

NEW PRODUCTS AND NEW RANGES

The Indian economy witnesses constant product diversification and transformation year after year. During the year 1972, several new items were manufactured and new ranges established for the first time in the country.

In the engineering stores group, the new items manufactured in the year included web offset printing machinery, calcination plant, razor blade manufacturing machinery, multi-mesh disc. filters and elements, ball valves and diaphragm valves, cridan automatic threading machine, microbore tools, ring gauges, needle roller bearings and needle roller cages, infra and equipment, electronic scanning machine for the production of documents to a stencil direct, automatic day and date wrist watches, data entry device model 129 (IBM), slip rings, test benches, miniature circuit breakers, neon lamps, argon gas-filled bulbs for miner cap lamps, printed circuit connectors, rack and panel connectors and BNC & UHF connectors, photo cells, hybrid circuits, aluminium metallised film capacitors, insulated type of resistors, metallised polyester and polycarbonate capacitors and balancing capacitors, non-inductive wire wound, closed circuit television systems, portable solid state oscilloscope-10 MHz, storage type oscilloscope, R.F. power meter-500 MHz, Magnesium metal, Aluminium bearing metal alloy and iron powder.

In the chemical stores section, the new products manufactured during 1972 were electrolytic manganese dioxide, phosphamidon and DDVP, sterile disposable transfusion/incusion sets, sulpha methizole, dimethylaniline, silicon carbide synthetic grains and crystal glassware.

Several new ranges were also established both in the engineering and chemical categories.

DOMESTIC PRODUCTION AND FOREIGN EXCHANGE SAVING

The net saving in foreign exchange due to improved production in the Indian economy was of the order of Rs. 34,272 million during 1972. The net saving in foreign exchange due to production in 1971 was Rs. 28,850 million. This was the conclusion arrived at by the Directorate General of Technical Development, Ministry of Industrial Development, on the basis of a study carried out by them extending over 112 selected industries for the years 1971 and 1972.

The study revealed that while the production of the selected industries registered an increase of 16.7 per cent during 1972, the allocation of foreign exchange as related to production was less by over 17 per cent.

The output of ball and roller bearings, for instance, improved from Rs. 240 million in 1971 to Rs. 266 million in 1972. The foreign exchange expenditure in these two years declined from Rs. 48 million to Rs. 27 million. Production of typewriters amounted to nearly Rs. 43 million in 1972 as against Rs. 41.4 million in the preceding year while the foreign exchange expenditure came down from Rs. 3 million to less than Rs. 1 million. For sewing machines, production went up from Rs. 45 million in 1971 to Rs. 47 million in 1972 but the foreign exchange content was reduced substantially from Rs. 400,380 to Rs. 34,000 only.

In respect of bicycles and bicycle parts, production value rose substantially from Rs. 407 million to Rs. 525 million, although the foreign exchange expenditure rose marginally from Rs. 12 million to Rs. 12.8 million.

The foreign exchange remained the same (Rs. 100,000) in respect of railway wagons, the production of which went up from Rs. 170 million to Rs. 253 million.

For products like duplicators, modern rice mill machinery, dal and flour machinery, copper, lead and flash light cases, the foreign exchange expenditure was nil during 1972 while in the previous year it was sizeable.

For certain other items like steel wire ropes, passenger and goods lifts, steel pipes and tubes, reduction gears, pulp and paper making machinery, building and construction machinery, metallurgical machinery, rayon plants, storage batteries, dry cells, air-conditioning and refrigeration, steel castings, fertilizers, viscose rayon products and caustic soda, production values rose in 1972 as compared with the preceeding year and so did the foreign exchange expenditure. The increase in foreign exchange expenditure, however, was not out of tune with the production rise.

Among the categories of industries which production rose substantially but the foreign exchange expenditure came down in these years, mention may be made of bright bars, welding electrodes, commercial vehicles, automobile ancillaries, agricultural tractors, diesel engines, boilers, cables and wires, electric-motors, switchgears, electric lamps, electric fans, transformers, scientific and surveying instruments, aluminium steel forgings, paper manufactures, automobile tyres and tubes, refractories, drugs and pharmaceuticals and petro-chemicals.

THERMAL POWER STATION WITH INDIGENOUS KNOW-HOW

The first phase of the Rs. 900 million Thermal Power Station at Santaldih, 250 Km. North-West of Calcutta, is now ready. This is a proud achivement especially in view of the fact that hardly a decade ago, equipment for such a Power Station was not only imported but also foreign engineers had to be called even to erect and commission the equipment. The successful completion of the first Turbine and Generator set at Santaldih establishes confidence and faith in Indian Engineers in the field of power equipment.

The equipment is being supplied by M/s. Heavy Electrical Factory, Bhopal. The supervision of erection is also being done by the Engineers of the Bhopal Factory and they in cooperation with the West Bengal State Electricity Board have successfully erected and commissioned the first 120 MW Turbine and Generator.

A large portion of the second set has been supplied by the Bhopal Electrical Facty and some of the equipment under manufacture will also be despatched soon to Santaldih from Bhopal. The third and the fourth units are under manufacture in the same Factory. The Power Station engineering associated with the Turbine and Generator was designed by the Bhopal Engineers.

The Power Station is located beyond the river Gowai which has plenty of Water. A number of coal mines and coal washeries are functioning for several years around Santaldih. This coal will now be feeding the power Station. The coal requirement of the first set of Steam Turbine and Generator is 1200 tonnes per day.

ON MINING MACHINERY INDUSTRY

Mining and allied machinery manufacturing sector has come of age in India. The country, today, is in a position to satisfy its own requirements of mining equipment locally as also to spare surplus for export. Among a number of units that are engaged in the manufacture of these equipment in the country, M/s. Mining and Allied Machinery Corporation, a public sector undertaking, has a proven record of increased production turnover from year to year. For instance, their output which was of the order of merely 5765 tonnes in 1969-70 increased sizeably to a level of 7742 tonnes in 1970-71, 11,200 tonnes in 1971-72 and further rose sharply to 15,450 tonnes in 1972-73.

The Corporation has achieved technical competence and expertise to undertake the manufacture of quite a few equipment of their own design, produced for the first time in the country. Main mine fans, large sized winders upto 1600 KV. and Crawler mounted bucket reclaimers are the prominent among them.

The Corporation, in tune with the Government of India's policy of encouraging the development of small scale industries, has set up an Ancillary Industries Development Cell in 1971 which has to its credit the development of 45 small scale units in West Bengal. It is also instrumental in developing further units in other areas. The Corporation is currently engaged in diversifying their range of output to include new lines of manufatcures, such as, bulk material handling equipment for ports, steel plants and fertiliser plants.

The Corporation has placed the target for production during 1973-74 at 20,800 tonnes valued at Rs. 200 million as compared to 15,450 tonnes valued at Rs. 154 million for 1972-73.

In the organised sector, there are 9 units engaged in the manufacture of mining and coal washery machinery (1972) with an installed capacity worth Rs. 300 million. The actual production during the year was estimated at Rs. 79.30 million as against Rs. 46.70 million in the preceding year.

SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT

PROGRESS IN SCIENTIFIC AND INDUSTRIAL RESEARCH

Modern India has succeeded, even on a modest scale, in widening its horizon of manufacturing capability and built up a fairly strong base of indigenous know-how. The progress achieved in scientific and industrial research has proved to be a determinant of this success. The efforts of the Council of Scientific and Industrial Research (CSIR), Rafi Marg, New Delhi deserve mention in this context.

Over the last two decades and a half, CSIR has contributed sizeably to the national objectives of product development and diversification, import substitution and import saving. It has established a net-work of National Laboratories (44) in different parts of the country to undertake research in diverse fields of science and technology. These laboratories have been active in basic and applied research in several disciplines of science and technology - physical, chemical, biological, terrestrial and space sciences. Besides, a variety of precision instruments, which are normally not available through trade channels, have been designed and developed in these organisations to meet specialised research requirements.

In the area of applied research, the CSIR laboratories have undertaken projects to achieve self-reliance in industrial production bv effectively utilizing the country's natural resources. The Council's researches have not only helped in establishing a strong industrial base but also in saving foreign exchange by import substitution. Some of the notable achievements in various fields, which have set the country on path towards self-reliance, are described belew :-

Electronics : The Central Electronics Engineering Research Institute (CEERI), Pilani and National Physical Laboratory (NPL), New Delhi have made significant contributions towards the growth of this technology in India. The excitation control system for diesel electric locomotives—a project of CEERI - is expected to result in foreign exchange savings of about Rs. 3 million per year. TV receivers, their components and parts, fabricated and developed out of indigenous material are already under commercial production and have helped reduce imports to a large extent.

NPL's processes for ferrites of hard, soft and professional grades, microwave components and the digital electronic desk calculators have contributed towards sizeable foreign exchange savings. The amount involved is around Rs. 40 million per annum.

The trisonic wind tunnel testing facility devised bv Hindustan Aeronautical Laboratory (HAL), Bangalore has saved foreign exchange to the tune of Rs. 8 million every year.

National Geographical Research Laboratory, Hyderabad has designed, developed and produced geographical instruments like Resistivity-meter, Eluxgate and Proton Precession Magnetometers, Electromagnetic Prospecting unit and Geophon at low cost to save outflow of foreign exchange.

Leather : Indigenous tanning material and improved tanning and finishing processes developed at the Central Leather Research Institute (CLRI), Madras heve helped the country to save about Rs. 20 million in foreign exchange every year. Now processes have been developed for the manufacture of belting leather, picking band straps and other industrial leathers.

The export-oriented processes developed by the Institute on hides and skins, E.I, leather, clothing leather, wet blue leather, leather goods and animal casings have pushed up the total exports from Rs. 77 million in 1952-53 to over Rs. 1704 million in 1972-73.

Glass and Ceramics : Scientific research in glass and ceramics has added a further dimension to the cause of import substitution. Products and processes developed in the country-most of them at the Central Glass and Ceramic Research Institute (CGCRI), Calcutta have resulted in a saving of about Rs. 25 million every year. They include among other things, bricks from waste mica, optical glass, infra-red glass, quartz and water filter candles.

Chemical Technology : A plant for production of acetanilide, hitherto imported, has been set up with the process developed by National Chemical Laboratory (NCL), Poona. This important intermediary is used in the manufacture of sulpha drugs.

The laboratory has, since 1965-66, been offering 'turn-key plants' to the industry. Plants for the manufacture of dioctyly/dibutyl phthalates have been successfuly commissioned. Saving in foreign exchange in this connection is expected to be over Rs. 8 million per year.

The NCL has so far developed over 120 processes leading to the manufacture of a number of industrial chemicals, dyes, drug intermediaries and fine chemicals.

Work on ion-exchange resins is in progress in many laboratories including Central Fuel Reasearch Institute (CFRI), Dhanbad; National Chemical Laboratory (NCL), Poona and Regional Research Laboratory (RRL), Hyderabad. Some results have already flown out and are being commercially exploited.

Food : A Rs. 90 million per year saving process for making baby food out of buffalo milk, is the gift of Central Food Technological Research Institute (CFTRI), Mysore. The Institute has also done pioneering work to develop high-protein foods from comparatively low-priced vagetable resources like oilseeds and pulses. The Institute has also to its credit the development of technology for the production of Protein Isolate from groundnut flour. The process has already been exploited commercially.

Metallurgy : National Metallurgical Laboratory (NML), Jamshedpur has developed a process for the production of flourspar, on the basis of which a plant has gone into prodution in Gujarat. It has a rated capacity for producing Rs. 40 million worth of flourspar. It is to help save about Rs. 30 million in foreign exchange per year.

The capability of the laboratory won international recognition when it got a UNIDO project assignment for laboratory and pilot plant scale studies on beneficiation, agglomeration, pre-reduction and smelting on low-grade iron ores from Aswan (Arab Republic of Egypt). The assigment has since been completed.

The research findings of the laboratories mentioned above, the extent of their commercial exploitation and the progress in import substitution emanating from them are only indicative. The research endeavour of CSIR and its laboratories is but a reflection of the extensive strides made in the field in India.

For the first time in Indian plans, the aspect of 'Science and Technology' has been accorded priority in the forthcoming Fifth Five-Year Plan (1974-79), aiming at providing further impetus to the fields where capability and competence already exists and in removing weaknesses in crucial areas like design, consultancy and natural resource assessment.

CHAMOIS LEATHER FILTER DEVELOPED

M/s. Pavan Automobile Accessories Corporation, Bangalore, a small scale unit has developed a new chamois leather fuel filter for petrol–run automobiles. The new filter can protect the carburettor from dust particles upto 3 microns as against 60 microns by the conventional paper and asbestos filters.

The firm has received quite a few enquires from all over the world. M/s. Fiat of Italy has placed a trial order for 8,000 filters and on their satisfactory performance, an order for 2 million pieces are likely to follow. M/s. Toyota of Japan and an American dealer in autmobile accessories have also approached the firm for supplies.

ADVANCE IN LEATHER INDUSTRY

The Central Leather Research Institute (CLRI), Madras, have recently developed design drawings for leather glazing machines. The machine can glaze four leathers in one cycle using a single prime mover. The design includes a novel device to rig the required pressure in glazing by mechanical hydraulic or pneumatic means, which are absent in the existing models. Another advantage of the machine fabricated according to this design pertains to the fact that less space and semi-skilled labour can be used for operating the machine. Four men can work at a time on one machine making use of the idle cycle, which increases productivity.

CLRI have also succeeded in developing a new prototype shrinkage testing instrument entirely out of indigenously available materials. Cost-wise, it is inexpensive and is primarily meant for import substitution. This is particularly suitable where constant individual attention is not always necessary.

INDIA'S FIFTH FIVE YEAR PLAN

India's Fifth Five-Year Plan, the draft of which was presented to the Parliament recently, envisages a total outlay of Rs. 534,110 million and an average rate of growth of 5.5 per cent in gross national product at factor cost over the five-year period 1974-79. Out of the total outlay, Rs. 372,500 million will be spent in the public sector and the rest in the private sector. In the public sector, Rs. 313,700 million are provided for investment and Rs. 55,800 million for current outlay. The major objectives of the Plan are removal of poverty and attainment of economic self-reliance. The Plan is embedded into a long term perspective plan for the economy covering the period 1974-75 to 1985-86.

Reviewing the achievements in the Fourth Five-Year Plan period, the draft Fifth Plan stated that the net domestic product at factor cost is expected to increase from Rs. 173,510 million in 1968-69 to Rs. 228,620 million in 1973-74, the last year of the Fourth Plan (in terms of 1960-61 prices). During the Fourth Plan period, the economy experienced fluctuating annual growth rates and the overall growth rate is likely to be 3.7 per cent per annum against the targetted rate of 5.7 per cent.

Non-inflationary development constitutes the centre of the scheme of resource mobilization for the Fifth Plan. This is sought to be done by achieving the needed rate of growth of wage-goods, especially agricultural, for mass consumption and accelerated development of 'core' sectors like steel, coal, oil, cement, fertilizers and power. The major instrument of resource mobilization are taxation, borrowings and pricing policies in relation to public enterprises. Public savings will thus be the corner stone of the resource mobilization strategy.

Out of the total investment of Rs. 475,610 million, Rs. 451,300 million will be financed by domestic savings and Rs. 24,310 million from the net inflow from the rest of the world. This means rise in the rate of investment from 13.7 per cent GNP in 1973-74 to 16.3 per cent of GNP in 1978-79.

Two principal uncertainties to be faced by the Plan relate to the amount and pattern of rainfall and availability of crude oil and derivatives like fertilizers. Therefore, energetic execution of irrigation progammes and production of energy from indigenous sources will receive higher priority in the Plan.

The Fifth Plan envisages that only a small fraction of total investment would be financed by means of external assistance. This would require that the country's food needs are met from the domestic sources excepting in emergency situation and that the energy base of the economy is re-structured. Also the contemplated growth of the core sector is expected to substantially reduce the import requirements.

The export policy in the Plan aims at generating sufficient exportable surpluses and developing the competitiveness of the export produce. The thrust of the policy would be to export commodities in more finished forms and developing the non-traditional exports, such as, engineering goods and chemicals.

The Plan's projection of balance of payment takes into account the recent sharp rise in international prices of some of the major imports like steel, POL products, newsprint and fertilizers and the growing burden of debt servicing. The major assumptions in the context of balance of payments include that the energy base of the economy would be restructured so as to improve indigenous availability; imports contributing to non-essential consumption would be restrained; the food economy would be efficiently managed; exports of non-traditional commodities would be developed adequately; foreign exchange gap would be met by gross assistance of Rs. 40,000 million which would be available on concessional terms (the debt servicing charges add up to Rs. 25,570 million and thus the net aid would be only Rs. 14,510 million).

The exports are projected to grow from Rs. 20,000 million in 1973-74 to Rs. 29,800 million in 1978-79. The combined rate of growth for exports would work out to 7.6 per cent which is about the same as actually realised in the Fourth Plan period. In the export earnings, large increases are expected to emerge from engineering goods, textiles, marine products and leather products.

The country's import bill is projected to grow to Rs. 31,000 million in 1978-79. This does not include any provision for food imports. During the Fifth Plan, major imports would be POL products, metal products, steel and fertilizers. The thrust of the import substitution has been directed towards these products. In case of POL, the substitution has to be made by greater use of coal and stepping up the pace of development to hydro-electric powder.

The sector-wise composition of the public sector outlay would be : Rs. 47,300 million in agriculture, Rs. 26,810 million on irrigation, Rs. 61,900 million for power, Rs. 89,390 million on mining and manufacturing, Rs. 71,150 million on transport and communications, Rs. 17,260 million on education, Rs. 4190 million on science and technology and so on. Within the constraints of available resources, the distribution of outlays has been attempted to optimise the use of resources keeping in mind the need for speedy completion of projects and programmes already underway, the fullest utilisation of capacity to yield better returns on investment and achieving at least the minium target of additional capacity in core sectors.

The National Programme for Minimum Needs as incorporated in the Plan envisages improvement in elementary education, rural health, nutrition, drinking water, provision of house sites, slum improvement and rural electrification.

In respect of agriculture, the Fifth Plan envisages a compound rate of annual growth of 4.2 per cent for rice, 4.8 per cent for wheat, 4 per cent for pulses, 4.9 per cent for sugarcane, 5.8 per cent for oilseeds, 4.3 per cent for cotton and 2.9 per cent for jute. For achieving the requisite growth targets, a multipronged effort will be aimed at including efforts like execution of land reform measures, effective operation of agricultural price policy, efficient water and land management, increase in cosumption of chemical fertilizers and expansion in institutional credits and certified seed programmes.

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The electricity generation requirements in 1978-79 are estimated at 130 billion kwh for the supply, of which an installed capacity of 33 million kw will be required. It is proposed to add 16.55 million kw of new capacity during the Fifth Plan. Energisation of 1.5 million pumpsets and elecrification of 101,000 villages is also programmed in the Plan period.

The Plan for industries and mineral sectors aims a annual growth rate of 8.2 per cent with emphasis o rapid growth of core sector industries, adequate suppl of mass consumption goods, creation of surplus capacit for export promotion, encouragement of village an small scale industries and development of industriall backward areas. ☐

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